PARENT PERSPECTIVES OF AN ELEMENTARY ONE-TO-ONE INITIATIVE: FIRST YEAR REFLECTIONS

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Susan Taylor Drumm

PARENT PERSPECTIVES OF AN ELEMENTARY ONE-TO-ONE INITIATIVE: FIRST YEAR REFLECTIONS

The purpose of this study was to investigate the perceptions of parents following the first year of a one-to-one iPad initiative in grades K-2. The study was conducted in a large, suburban school corporation in Indiana with a K-2 enrollment of approximately four thousand students housed in twelve elementary buildings. The iPad implementation in this district is one part of a larger constructivist teaching and learning initiative; the district hopes that personal digital devices will become cognitive learning tools in the hands of students (Jonassen, 1994).

In order to give all K-2 parents the opportunity to provide feedback on the iPad roll out, a survey design was chosen for this study. The One-to-One Parent iPad Survey, composed largely of open-ended questions, elicited 2,312 submittals during a two-week deployment window. The Survey queried parents on their perceptions and experiences concerning the iPad program, classroom iPad use, and home iPad use.

Survey data revealed widely disparate views between families regarding the one-to-one initiative. Over 50% of parent respondents were satisfied with the initiative in its first year; a smaller but significant number of parents were dissatisfied. Data indicated that K-2 parents hold differing fundamental beliefs as to the appropriateness of iPads in elementary school. If technology *is* to be employed, parents also differ as to how they want or expect the iPads to be used (or not) in the hands of their children. Many parents appreciated the student engagement, skill development, and daily classroom connections fostered by the iPad. They expressed

concern, however, in the areas of program management, teacher readiness, home-school communication, and parent support.

The dissertation study closes with a discussion of the implications of survey results and offers recommendations for the district under study as the one-to-one initiative continues.

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Table of Contents

List of Tables

Chapter 1. Introduction

Background

Investment in digital devices as learning tools in K-12 settings continues to escalate across the United States. Futuresource Consulting, a UK-based market research and forecasting firm, reported an eighteen percent increase in the number of mobile PCs entering the education market between 2015 and 2016, and the firm has predicted another double-digit upward trend for 2017 (Futuresource Consulting, 2017). Thanks in large part to 2014 federal E-rate modernization (Federal Communications Commission, 2014) and the Obama ConnectED Initiative (Office of Educational Technology, n.d.), Internet connectivity in K-12 environments is steadily increasing as well (Education Superhighway, 2017). In 2013, forty million students did not yet have access to high speed Internet at school; as of 2017, the number of unconnected students in the United States has dropped to six million. Though the connectivity gap has not yet flat lined, it has narrowed by a dramatic eighty-four percent in four years (Education Superhighway, 2017). The ConnectED Initiative has set a goal of 2018 by which to have ninety-nine percent of United States K-12 students connected to broadband Internet in their schools (Office of Educational Technology, n.d.).

Investment in digital devices and the infrastructure to support Internet connectivity in schools is based on the belief that K-12 technology integration holds the potential to positively impact student learning. The question of whether an emerging technology might be useful as an instructional tool is not new – researchers have sought to apply technological innovations, what Gagne referred to as the "things of learning", to the learning process for decades (Gagne, 1974; Lowyck, 2014). Each advance in media and technology, dating back to the late nineteenth

century, has ushered in a simultaneous look into how the new 'thing' might become a 'thing of learning' through which to aid instruction. (Molenda, 2008).

The basis for today's educational technology investment does not lie in one solitary innovation, however, but in a complex array of technological, economic, political, and sociological factors that have coalesced in the early twenty-first century. The causes and effects of this global upheaval have been explored by thinkers such as Thomas Friedman in *The World Is Flat: A Brief History of the Twenty-First Century* (2005). Most aspects of Digital Age change, including many of its implications for the education sector, are beyond the scope of this study. One aspect of change that is critical to this investigation, however, is the revolution in personal computing, which now enables mobile, affordable, and constant access to the world of people and ideas (Friedman). The recent explosion in educational technology investment is, in part, tied to the belief that this emerging technological 'thing' – personal, connected computing – has the potential to be the 'thing of learning' that revolutionizes education (U.S. Department of Education, 2016, 2017).

One other factor influencing today's upsurge in education technology investment bears mention. It is simply this: the opportunities afforded by Digital Age computing have surfaced alongside comparable developments in the science of learning – and contemporary learning science lends itself to the use of personal learning tools. Constructivist learning theory, dominant today, describes learning as an active endeavor—a complex weaving of thought processes in which meaning is constructed as learners synthesize past and present experiences together to build new knowledge (Lowyck, 2014). In a constructivist framework, learning is an individual, personal enterprise – and a connected mobile device becomes a powerful vehicle through which to drive one's own learning. With connected devices in hand, students have the means through

which to inquire, discover, connect, collaborate and share. In a constructivist framework, iPads become more than static containers for or conveyers of information; devices such as these become personal, cognitive *mindtools* that foster critical thinking and knowledge construction (Jonassen, D., Carr, C. & Yeah, H., 1998; Ertmer & Ottenbreit-Leftwich, 2013). Educational technology investment is soaring because of these possibilities.

It is stakeholders at the state and local levels, however, who are faced with the challenge of turning possibility into reality (Clark & Luckin, 2013; U.S. Department of Education, 2016, 2017). Schools and school districts throughout the developed world are currently navigating the complex digital landscape, seeking to determine which technology integration options are affordable and sustainable, and then working to bring these new digital tools to scale in ways that support teachers and foster student learning (Jones, Fox & Neugent, 2015; U.S. Department of Education, 2016, 2017). This challenge can be complicated by the pull of a massive educational technology industry. EdTechXGlobal reports that the global Ed Tech market is expected to reach $252 billion by 2020 (Marketwatch, 2016), and the Apple corporation reports that there are now over 180,000 apps specifically designed for education (Apple, 2017). In addition, since individual state legislatures define academic standards and distribute funds, shifting political winds (and thus mandates and dollars) can add to the complexity of technology decision making (Apple, 2016; Au, 2016).

One technology integration model for schools that is being increasingly adopted across the United States is *one-to-one (*Lei, Conway, & Zhao, 2008). The one-to-one model provides each student with his or her own personal digital learning tool (Islam & Grönlund, 2016; Lei, 2010; Lei & Zhao, 2008). As with less robust computing initiatives, the growing prevalence of one-to-one technology models can be traced to the economic and cultural forces discussed above.

Kong and Li (2009) have proposed three distinct reasons for the upsurge in one-to-one programs in particular: the ubiquitous nature of technology in our lives in general, an increasing demand from millennials that technology be available anytime and anywhere, and rising expectations that schools prepare students for success in the 21st century global economy (Kong & Li, 2008; Lei, Conway, & Zhao, 2008). Increasingly, local education agencies are turning to one-to-one technology integration as a way to address these societal demands.

This research study was conducted in one Indiana school district in the midst of navigating change; specifically, as it has taken steps to leverage digital learning to prepare students for adult life in the Digital Age. Embedded within a broad teaching and learning initiative, the school district began a one-to-one Apple iPad program for K-4th grade students during the 2016-2017 school year. Each kindergarten through fourth grade student rented (from the district) or brought an iPad from home to use during school. This dissertation arose out of the need for data surrounding the one-to-one program in its first year. As will be detailed in Chapter 3, parents in this district, primarily K-2 parents, were polarized in their views on the district iPad initiative in advance of the roll out. Since parents are critical stakeholders in the education of their children (Jeynes, 2011; Wilder, 2014), it was imperative to gather feedback from K-2 parents following the iPad initiative's first year. By considering parent perceptions, it was hoped that the district would gain understanding to aid in future decision-making.

Problem Statement

Since the adoption and use of digital learning tools, particularly through a one-to-one model, is steadily increasing in K-12 schools (Futuresource, 2017) we need to understand how this technology-enhanced instruction is perceived and received by parents, so that we may

develop targeted communication and support structures for families as technology initiatives unfold.

Purpose of the Study

The purpose of this study was to understand the beliefs of K-2 parents in one school corporation following the first year of a one-to-one iPad rollout for their children.

As parents are integral partners in the instructional process (Jeynes, 2011; Wilder, 2014), it is important to understand their feelings about the introduction of this school-required digital learning tool. It was hoped that this study would reveal parents' positive observations and concerns regarding the iPad initiative in such a way as to be useful to the school district – that the study might suggest beneficial program adjustments and guide the development of parent communication and support strategies moving forward. The following research questions guided the study:

1. What positive observations do parents have about their child's use of the iPad during the 2016-17 school year?
2. What concerns do parents express regarding their child's use of the iPad during the 2016-17 school year?
3. What do parents believe are the advantages and disadvantages of taking the iPads home each day versus keeping the iPads at school overnight?
4. How do parents believe that the school district can provide further education and support to families with regard to this one-to-one initiative?

Research Method

A survey research design was chosen for this investigation. Rossi, Wright and Anderson (2013) explain survey research as simply the collection of information – about individuals, their

households, or other social units (Rossi, et al.). Though surveys are often thought of as one source of data within larger quantitative or qualitative research studies, a survey design in and of itself is useful when the research goal is simply to describe the trends, attitudes, or opinions of a population by studying a sample of that population (Creswell, 2014). As the district and the researcher desired to give all K-2 families in the district (representing approximately eight thousand students) the opportunity to voice their feedback, shear numbers made a survey research design the most efficient method of data collection.

The One-to-One Parent iPad Survey was constructed specifically for this study. Survey questions were drafted by the researcher and revised by the researcher and the researcher's dissertation committee. Questions were then reviewed by a district Instructional Technology Coach and by the experienced representative from a national education consulting firm. Since the goal of the study was to elicit candid, thorough feedback on high-priority topics for parents, the bulk of survey questions were open-ended. Appendix A contains the full survey text. The survey was piloted with several district parents, who offered only minor revisions; after which the One-to-One Parent iPad Survey was deployed.

Data analysis

Through this investigation, the researcher sought to gather and analyze the perceived impact of a one-to-one iPad initiative on parents of K-2 students in one Indiana school district. Data were gathered over a two-week period in June 2017; data analysis began immediately following the close of the survey. Descriptive statistics were calculated within Excel; open-ended data were imported into MAXQDA software for analysis. MAXQDA allowed parent comments to easily be sorted by survey question and by each of the twelve elementary school buildings.

Qualitative data were analyzed using a grounded theoretical approach (Glaser and Strauss, 1999). Grounded Theory is an inductive data analysis method in which theory development occurs during the research process, rather than preceding it (Charmaz, 1996). Data analysis led to the creation of codes and themes *insitu*, as data were examined in a spiraling, iterative fashion. Emergent themes were consolidated. All data were stored on the researcher's computer which was locked when not in use. Further information about this Midwestern school district and its path toward one-to-one, as well as a more detailed description of the study's method, will be presented in Chapter 3.

Definitions of Key Terms

Parent.

The term *parent* in this study will be used to refer to a student's parent or guardian; that is, 'parents' are the adults with whom a child lives and who have responsibility over his or her welfare.

One-to-one technology integration.

A one-to-one program is a model of technology integration in which the ratio of digital tools to students is one-to-one; that is, each student is in possession of a tablet or laptop for learning. Devices are not typically shared. Digital devices are often owned by the district and assigned to students; however, in some school communities families 'rent' the devices or bring a family-owned device from home.

Significance of the Study

The potential of classroom technology initiatives, particularly one-to-one laptop and tablet initiatives, to positively affect learning is impacted by a complex array of factors in the areas of infrastructure, leadership, professional development, digital resources and ongoing

support (Anderson & Dexter, 2005; Hew & Brush, 2006; Su & Bay, 2009; U.S. Department of Education, 2016, 2017). Research conducted since these programs began has affirmed that the most successful technology initiatives take into account the various stakeholders in a learning community (Grunwald Associates LLC, 2013; Silvernail & Lane, 2004; Straub, 2009); in K-12 school settings, key stakeholder groups are administrators, teachers, students, and parents (Su, 2009). Teacher preparedness, perceptions and beliefs surrounding digital learning have been extensively studied (Bebell & Kay, 2010; Christensen, 2002; Ertmer & Ottenbreit-Leftwich, 2010; Ertmer & Ottenbreit-Leftwich, 2013; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, E., & Sendurur, P., 2012; Kopcha, 2012; Lei & Zhao, 2008), as have student perceptions and uses of digital learning tools (Bebell & Kay, 2010; Christensen, 2002; Lei & Zhao, 2008; Zheng, Arada, Niiya & Warschauer, 2014). Though we know that parents play a critical role in student achievement (Blanchard & Oliver, 1999; Epstein, 1985, 2013; Goodall & Montgomery, 2014; Jeynes, 2012; Patrikakou, 2015, 2016;), and that technology may enhance home-school communication in general (Lei & Zhao, 2008; Olmstead, 2013; Zheng, Warschauer, Lin & Chang, 2016), research is needed on parents as stakeholders in one-to-one technology initiatives, particularly in elementary school settings (Blanchard & Oliver, 1999; Future of Privacy Forum, 2016; Grunwald Associates LLC, 2013; Jin & Schmidt-Crawford, 2017; Olmstead, 2013; Patrikakou, 2015, 2016). Gathering parent data in individual implementations is a first step in this process. By assessing K-2 parent perceptions following the first implementation year of a one-to-one iPad rollout, the researcher hoped to provide data to assist this district in evaluating the success of their communication and support strategies for families in the initiative's first year, uncovering gaps and areas of need moving forward.

Organization of the Remaining Chapters

This dissertation is composed of five chapters. This chapter, Chapter 1, provides an overview of the study, including background material, the purpose of the study, and the significance of the study. Chapter 2, a literature review, examines the research base for technology integration in K-12 education and, in particular, one-to-one technology implementations. Literature on home-school connections and parent involvement in the educational process will be discussed as well. Chapter 3 explains study methodology and design, data collection and data analysis. Chapter 4 uses the individual questions posed to parents as a frame from which to present the One-to-One Parent iPad Survey data. Chapter 5 begins with an explanation of study findings through the lens of each research question, and then discusses the implications of these findings. The study concludes with recommendations for the district in which the investigation occurred.

Chapter 2. Literature Review

Introduction

This chapter provides an overview of the research base pertinent to the study. The literature review begins with a discussion of 'purpose' in educational technology, in order to clarify the lens through which the current school district's initiative has been conducted. The review then proceeds to summarize our current knowledge base on the impact of mobile computing devices (laptops and tablets) in K-12 environments. Primary emphasis is placed on literature connecting technology with student engagement, personalization of learning, and differentiation of instruction, as these domains have both a strong research base and are of particular importance to the school district under study. Constraints to the impact of technology integration will be summarized, as these have bearing on the rollout in question. Following this background of K-12 technology integration research, discussion turns specifically to the history and impact of *one-to-one* technology integration models in K-12 classrooms.

This chapter will also discuss the role of parents in the learning process, crucial since this study is based on the premise that parents' perspectives of the current iPad rollout will be meaningful. The fact that parents are important stakeholders will be justified, and research supporting the relationship between parent involvement and student success will be summarized. This chapter concludes with an overview of early research has been conducted on K-12 *one-to-one initiatives* through a parent lens. Through understanding the state of our knowledge concerning parents and one-to-one initiatives, we will have a foundation from which to analyze parent perspective in the current study.

Educational Technology Purpose

Technology may be implemented in K-12 classrooms for any number of purposes; it is imperative to consider the purpose of a technology integration in order to weigh its impact. One-to-one initiatives, in particular, have been pursued in local communities for a variety of stated purposes. Among these are equity of opportunity for all students, a 24/7 connection to educational resources, and 21st century skill development (Penuel, 2006); ultimately, technology adoptions are undertaken with the hope that they will positively impact student learning (Ross, Morrison & Lowther, 2010; U.S. Department of Education, 2016, 2017).

To frame the purpose of technology integration in the district under study, it is helpful to consider the framework of purpose offered by Ross, Morrison and Lowther (2010) in a paper which revisited technology research of the past and made recommendations for the future. The researchers provide an easy-to-understand list of purposes for the integration of classroom technology: 1) technology as tutor; 2) technology as teaching aid; and, 3) technology as learning tool (Ross et al., 2010). Technology as tutor refers to CAI, or computer-assisted instruction, traditional instructional media in which students are guided through content and/or practice. As teaching aid, the researchers point to technology which helps instructors build and present lessons in more engaging and meaningful ways – applications that embed multimedia or collect immediate student feedback, for example. Though iPads are used in the school district under study as tutor and as teaching aid, it was primarily the third conception – the hope of technology as *learning tool* – that drove this district's iPad initiative.

The notion that a computer could become a *learning tool* as opposed to a mere deliverer of instruction was envisioned by Seymour Papert in his 1980 seminal work, *Mindstorms: Children, Computers, and Powerful Ideas* (Papert, 1980). In an era before mobile computers

were marketable, much less commonplace, Papert saw a future educational system in which computers functioned not as deliverers of instruction (tutor), but as "objects-to-think-with" (p. 11). "My interest is in the process of invention of "objects-to-think-with," objects in which there is an intersection of cultural presence, embedded knowledge, and the possibility for personal identification," (p. 11). In Papert's vision, if educators chose to approach the up-and-coming computational devices less as 'machines' and more as *conceptual thinking tools*, age, stage, and cultural limits on learning and knowledge would diminish.

Jonassen built on this theme of educational technology as a conceptual resource, when in the early 1990s he used the term *mindtool*s to describe a paradigm in which computing devices serve as instruments to aid in knowledge construction. In a 1994 paper, Jonassen wryly explained his perspective on the matter:

> …we should take the tools away from the instructional designers and give them to the learners, as tools for knowledge construction rather than media of conveyance and knowledge acquisition. The process of building knowledge bases using these tools (a process that Papert refers to as constructionism) will engage the learners more and result in more meaningful and transferable knowledge in the learners. I argue that we should invest the power of the technologies in the learners. Power to the people, so to speak. (Jonassen, 1994, p. 2)

Papert and Jonassen believed that putting computers, or cognitive *mindtools*, directly in learners' hands would foster active critical and creative processing, vital to knowledge acquisition. Employed as digital tools, students would learn *with* devices and not *from* them. It is this vision of iPads as cognitive learning tools that provided the motivation for technology integration in the district under study.

Educational Technology Impact

The school district under study has implemented a one-to-one model with the belief that when incorporated as learning tools, iPads will positively impact teaching and learning. Scholarly investigations over the past several decades have borne out this potential impact (Chauhan, 2017; Hsu, Hung, & Ching, 2013). In fact, though media comparison studies can still be found (Chauhan, 2017), most education scholars agree that the current and appropriate question is not *Is technology effective?* but *In what ways and under what conditions is technology effective?* That is, in what ways and under what conditions does the use of digital tools in K-12 classrooms have a positive impact on student learning outcomes (Harper & Milman, 2016; Ross, Morrison & Lowther, 2010; Tamim, Bernard, Borokhovski, Abrami & Schmid, 2011; Weston & Bain, 2010)? In the words of one research group, "…it is the pedagogical use of technology and the effectiveness of instructional/learning strategies in achieving intended learning outcomes that constantly concern researchers and educators in EDTECH…" (Hsu, Hung & Ching, 2013, p. 700).

Of the many educational technology parameters and conditions which have been studied in the recent past, this literature review will highlight two, as these are of particular significance to the school district being studied. These are the impact of technology integration on student engagement, and the impact of technology integration on the personalization/differentiation of learning.

Student Engagement

Student engagement in school has been shown repeatedly to contribute significantly to academic achievement (Christenson, Reschly, & Wylie, 2012). Engagement has traditionally been categorized as behavioral, affective/emotional, and/or cognitive (Fredricks, Blumenfeld,

Friedel, & Paris, 2005). Though behavioral engagement, including factors such as effort and attention, and affective engagement, that is, positive feelings about school and a sense of belonging, may also be influenced by the use of technology (Fredricks et al., 2005; Clark & Luckin, 2013), it is cognitive engagement that will be considered here. Cognitive engagement is the state of being that leads to "self-regulated learning, using deep learning strategies, and exerting the necessary effort for comprehension of complex ideas" (Fredricks, 2016, p. 2). High levels of student engagement are desired, since cognitively engaged students are more likely to thrive academically (Christenson, Reschly, & Wylie, 2012; Newmann, 1992). Studies across grade levels, content areas, and demographic groups have addressed the effects of digital devices on student cognitive engagement; the consensus is that positive effects exist (Harper & Milman, 2016). Attard and Curry (2012) found that third graders' level of engagement in mathematics grew when iPads were incorporated into instruction. In a mixed-method case study involving students from multiple elementary grade levels (PreK-4), Milman, Carlson-Bancroft, and Boogart (2014) reported high levels of learning engagement when young students used iPads in reading and math.

In a dissertation study involving over 1600 students, Garwood (2013) explored the cognitive engagement and comprehension of third through sixth graders when electronic books were integrated in a one-to-one iPad setting. Findings showed that across all student demographics, children in the iPad program were more frequently engaged in learning activities at higher cognitive levels as measured through listening comprehension and teacher feedback.

Cognitive engagement gains extend to student subpopulations as well. In a study of iPad integration for students with language-based disabilities, Cumming and Draper-Rodriquez (2013) found that iPad use increased students' levels of academic engagement. Mouza (2008)

discovered that laptop integration enhanced motivation and engagement with schoolwork, influenced classroom interactions, and empowered students in a high poverty, urban school. In a dissertation case study investigating the effects of iPads on the content and language learning of English language learners (ELL), Prince (2014) reported that teachers perceived increased ELL student agency and persistence when using the iPads, and noted that this increased engagement was believed to help build a foundation for cognitive growth.

Personalized Education

A second research-based benefit of technology integration in K-12 classrooms is that of personalized learning. Though the term is used with varying connotations in the literature, the concept of *personalized learning* refers generally to learning that builds on student interests and passions, thus fostering student choice (Song, Wong & Looi, 2012), and/or instruction differentiated to meet specific student needs (U.S. Department of Education, 2017).

In a study seeking to understand how personalization affects student choice and the development of agency, Song, Wong & Looi (2012) found that the accessibility of digital devices in the classroom led to students' maturation as independent, self-driven learners. "We argue that students' such conscious personalization is the key to nurture life-long learners who can practice and develop agency to learn their own ways" (p. 699). The researchers conclude that digital tools have the capabilities to support conscious personalization.

Recognizing that classroom environments which foster student agency and choice are largely teacher determined, Geer, White, Zeegers, Au, and Barnes (2015), recently sought to discover whether the implementation of iPads did indeed lead teachers to adopt more inquiry-driven, constructivist pedagogical practices. Using Puentedura's Substitution-Augmentation-Modification-Transformation (SAMR) Framework to evaluate teachers' levels of technology

integration (Puentedura, 2009), researchers determined that the iPads did foster changes in pedagogy. Students used the iPads at home to document real life situations – by taking pictures with the tablet camera, for example – and submitted them electronically to their teacher. This documentation of authentic experience and electronic submission, the researchers argue, indicated positive movement along the SAMR continuum, which, in turn, impacted student collaboration, communication and autonomy (Geer et al.). Though the researchers acknowledge that further study is needed, their conclusions suggest that iPad use may foster a pedagogical shift in the direction of personalized learning.

To examine the benefits of devices to personalize instruction by differentiation, Frazier (2014) conducted a case study of kindergarten through second grade teachers' use of iPads, finding that teachers appreciated the variety of ways in which iPads enabled them to differentiate instruction. "With one-on-one iPad use, students can be reading books at different levels and working on other assignments at their own levels," one teacher noted (p. 75). Huang, Liang, Su, and Chin (2012) investigated the potential of an e-book learning system to deliver more personalized learning experiences for elementary students, finding that using the electronic system produced a "detailed and visible learning process which a printed book cannot offer" (p. 720). Huang et al. noted that one distinct advantage is that "individual learning activity can be recorded to establish a link between instructors and parents," (p. 720).

Constraints to Technology Integration

Though the literature reveals positive outcomes in the areas of cognitive engagement and the personalization of learning, caveats exist. The preconceived beliefs about technology held by teachers, as well as their preparedness to integrate digital tools, influence the success of classroom technology initiatives (Ertmer & Ottenbreit-Leftwich, 2010; Ertmer & Ottenbreit-

Leftwich, 2013; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, E., & Sendurur, P., 2012) Building leadership is a key to success as well (Dawson & Rakes, 2003). In a study which operationalized technology leadership based on the International Society for Technology in Education's National Education Technology Standards for Administrators (NETS-A), Anderson and Dexter (2005) noted that unless key administrators were themselves technology leaders at school, technology initiatives could be seriously threatened. A third caveat to successful technology integration in schools the necessity of a robust infrastructure and a plan for ongoing technology support (Islam & Grönlund, 2016). The U.S. Department of Education, in recognizing that meaningful digital learning is only possible with a network of support, recently released *Building Infrastructure for Learning,* a publication providing helpful information to schools and districts about various infrastructure concerns (U.S. Department of Education, 2017).

Despite recognized constraints – the necessity of professional development, strong leadership, a robust infrastructure and an ongoing system of support – the broad research consensus is still that technology integration in classrooms has the potential to positively impact teaching and learning in K-12 schools. The body of research supporting the efficacy of digital devices in classrooms is particularly strong in the areas of student engagement and the personalization/differentiation of learning, areas which are important to the school district studied here.

One-to-One Technology Integration

Accepting the potential of classroom digital tools to positively impact certain student outcomes, what of the ratio of devices to students? Does each student need their own personal device? The one-to-one model of technology integration, in which each student uses his or her

own computer or mobile device, is not new, reaching back as far as 1989 in Australia (Jin & Schmidt-Crawford, 2017) and the mid-1990s in the United States (Penuel, 2006). The Maine Learning Technology Initiative, or MLTI, was the first statewide adoption of a one-to-one initiative; beginning in 2002, MLTI provided a laptop for each 7th and 8th grade student in the state (Silvernail & Lane, 2004). In the intervening years, research into the effects of one-to-one adoption and implementation has been extensive. Although studies do reveal the challenges and setbacks inherent in one-to-one initiatives (Silvernail & Lane, 2004; Swallow, 2015; Harper & Milman, 2016), the majority of investigations have concluded that one-to-one initiatives can be beneficial to student learning, depending on how the technology is used (Harper & Milman, 2016; Henderson-Rosser & Sauers, 2017; Holen, Hung & Gourneau, 2017).

As early as 2006, a synthesis of one-to-one program empirical research findings was conducted by Penuel. At that time, one-to-one initiatives were solely laptop-based, since tablets were not yet widely available. Penuel identified thirty studies of one-to-one laptop initiatives and categorized each by stakeholder goals: improving academic achievement, increasing equity of access to digital resources, increasing the economic competitiveness of the region, and transforming the quality of instruction. Penuel found that the success of one-to-one implementations was highly influenced by teacher beliefs about technology and by professional development support, both formal and informal. Just-in-time technical support was also critical to the success of one-to-one programs (Penuel, 2006). Since 2006, these early findings, that teacher beliefs, professional development, and technical support are critical to the success of one-to-one programs, have been steadily reinforced (Bebell & Kay, 2010; Islam & Grönlund, 2016; Lei & Zhao, 2008).

More recently, a meta-analysis of empirical studies investigating the effectiveness of one-to-one programs was undertaken by Harper & Milman (2016). By this juncture, one-to-one implementations had come to include mobile tablets (such as the iPad) in addition to laptops. Harper and Milman examined forty-six studies published between 2004 and 2014, informed by one forthright guiding question: *What does research tell us about one-to-one technology in K-12 classrooms?* This investigation confirmed that one-to-one technology integration does have the potential to positively impact student learning in a number of areas. Especially regarding student engagement, the personalization of learning, and differentiation of instruction, there is evidence that digital tools in the hands of each teacher and student can be educationally powerful, resulting in more constructivist practices and personalized feedback on the part of teachers (Harper et al., 2016; Lowther, Inan, Strahl & Rossi, 2012) and enabling deeper learning experiences for students (Mouza, 2008). Harper and Milman note that there is much work left to do; they propose a research agenda that includes longitudinal studies of student engagement, and the examination of conditions leading to the buy-in of students, teachers and parents as technology rollouts occur. Harper and Milman caution against seeking to measure the impact of one-to-one programs on student achievement, and, like others in the educational technology field, encourage researchers instead to look for why, how, and to what extent one-to-one technology supports the learning process (Harper et al., 2016; Ross, Morrison & Lowther, 2010).

Though still very early, multiyear studies of one-to-one integration initiatives have begun to emerge. For example, a case study of transition to one-to-one laptops, Swallow (2015) chronicled one middle school's second year decline in satisfaction with the program as expressed by teachers and students. Swallow determined that the root of dissatisfaction was due, in large part, to the fact that many teachers, even in the initiative's second year, preferred and

implemented traditional classroom structure and methods; that is, pedagogy did not reflect constructivist pedagogical practices. Since the district considered in this dissertation study has implemented technology for the particular purpose of fostering constructivist practices, it is important to recognize that even in the second year, a one-to-one technology initiative does not automatically result in pedagogical shift (Swallow, 2015).

In summary, the ultimate goal of tech integration is to positively impact student learning (Ross, Morrison, & Lowther, 2010). Academic study has shown that K-12 technology integration in general and the one-to-one model of technology integration in particular have the potential to positively impact student learning in certain domains and under a variety of conditions. The district under study has designed a classroom technology integration plan that is indeed supported by research.

Home-School Connections

The current study seeks to interpret a one-to-one technology initiative through the lens of parents; therefore, it is important to establish that the parent perspective is worthy of consideration. This portion of the literature review begins with a discussion parents as stakeholders in school systems. Next, since one element of this study considers at home co-learning between parents and students, the research base regarding parent involvement in learning and student outcomes will be summarized. Finally, an overview of early research on parent involvement in learning through technology will be offered.

Parents as Stakeholders

Massive change in societal systems has been a hallmark of the Information Age, according to systems expert Dr. Charles Reigeluth (1994). One of these key shifts has been in the leadership and decision-making paradigms of organizations. In *Systemic Change in Education*

(1994), Reigeluth explains that Industrial Age leadership structures were typically hierarchical, with decisions made unilaterally by an organization's highest officers. The Information Age, by contrast, has ushered in a more team-based approach to decision making, one in which leadership is distributed horizontally and decisions are frequently made with the input of multiple stakeholders. Though these systemic changes began in the business world, this new model of decision-making and shared ownership of systems has impacted education as well (Reigeluth & Garfinkle, 1994).

In K-12 school settings, key stakeholder groups are administrators, teachers, students, and parents (Su, 2009). Research has affirmed that the most successful technology initiatives in school system settings take into account these various stakeholders in a learning community (Grunwald Associates LLC, 2013; Silvernail & Lane, 2004; Straub, 2009). By examining parent perspectives on this district's one-to-one rollout, this dissertation study hopes to provide useful stakeholder data that the district will take into consideration as the initiative moves forward.

Parent Involvement in Learning

Academic research over the past four decades has established a strong positive correlation between parental involvement in education and the learning outcomes of children (Blanchard & Oliver, 1999; Epstein, 1985; Henderson & Berla, 1994; Jeynes, 2007, 2011; Ma, Shen, Krenn, Hu, & Yuan, 2016; Wilder, 2014). A comprehensive meta-synthesis of parental involvement in education was undertaken by Wilder in 2014. Wilder aggregated data from nine meta-analyses; each of which had aggregated multiple studies on the topics of parental involvement and academic achievement. Wilder's findings reinforced a conclusion shown by hundreds of studies conducted over forty years: a strong positive relationship exists between parent educational involvement and student academic achievement. In addition, Wilder was able

to conclude that this positive correlation holds true even after accounting for slight variations both in the definitions of *parental involvement* and in the type of *academic achievement measure* throughout the studies (Wilder, 2014).

The benefits of parental engagement in the learning process remain strong, even when only the specific population of this dissertation study, that is, K-2 elementary school students, is considered. A 2016 meta-analysis by Ma et al. looked specifically at the role of parental involvement and its connection to learning for children in preschool and the primary grades. The meta-analysis considered one hundred distinct findings from forty-six studies, all of which focused specifically on the outcomes of parental participation in the learning process during preschool, kindergarten and early elementary school. The researchers not only confirmed that studies do strongly support a positive correlation between parental involvement and learning outcomes for children during the early years; they were also able to distinguish differences in effect based on type of parental involvement. Ma et al. concluded that involvement of the parents of early learners that is family driven, i.e., parent-initiated, has a stronger correlation to learning outcomes than that driven by schools and communities, what they term "partnership development", but both were significantly tied to student success. The researchers encourage policymakers and practitioners to continue and expand efforts to develop parent partnerships. (Ma, et al., 2016).

Considering the *nature* of parent involvement in schooling and its connection to student learning, research has shown that the aspects of a parent's connection to schooling that are most significant to student achievement may be those most subtle. Recent research points to the fact that episodic homework assistance and shared reading (outwardly manifested forms of parental

involvement) contribute much less to student success than do parental expectations, parent-child communication, and parental style (more subtle aspects of involvement) (Wilder, 2014).

Of particular interest in the context of this dissertation study is a meta-analysis conducted by Jeynes which examined the academic benefit to students of parental involvement *programs*. In 2012, Jeynes analyzed fifty-one studies in an attempt to determine if and to what extent parental involvement programs affect student achievement. Through quantitative analysis, Jeynes found that programs designed to encourage parental support for their child's schooling did have a positive relationship on student academic outcomes. Similar to the findings of Ma et al. (2016), Jeynes determined that the effect of programs, i.e., school-initiated opportunities for involvement, was not as great as the effects of voluntary acts of parental involvement but was significant nonetheless. That is, reaching out to families does positively influence student outcomes.

Parental Involvement in Learning — and Technology

The Digital Age opens up an entirely new sphere of possibility for partnership between home and school (U.S. Department of Education & U.S. Department of Health and Human Services, 2016); one researcher has referred to this new sphere of possibility as the "technology wild card" (Patrikakou, 2015). This "wild card" — the rapid spread of mobile technologies for communication and learning, especially when specific technologies are a part of a child's learning at school and at home — leads to new questions. In what ways and to what extent might mobile technology use influence the home-school connection? What impact might the presence of a digital learning tool at home have on parent participation in the learning process? Might these digital tools foster parent child interactions that lead to increased student learning? As emerging technologies make teaching and learning less dependent on time and place, and as

schools continue to invest in more personalized, just-in-time learning through one-to-one tools, the breadth of this area of research is only beginning to be explored (Jin & Schmidt-Crawford, 2017).

One study has looked directly at how emerging technologies might foster communication between home and school (Olmstead, 2013). Parents and teachers in one elementary school were surveyed for the purpose of assessing whether technology as a communication tool between home and school led to perceived improvements in connectedness between school and home. Data revealed that both parents and teachers believed the use of technology as a communication tool did effectively promote parental involvement. As this study examined perceptions only, more research is needed for the potential of technology as a home-school communication tool to be fully understood (Olmstead, 2013).

In perhaps the first study to directly examine parents' views of a *one-to-one* technology initiative, Jin and Schmidt-Crawford explored parent perceptions during a one-to-one laptop implementation at a Midwestern high school. Through two surveys, one immediately preceding the rollout in the fall, and one the following April, Jin and Schmidt-Crawford sought to understand what parents believed to be the benefits of the initiative and what concerns they had moving forward. Based on these surveys, Jin and Schmidt-Crawford identified three areas for the school to address: the need to understand and address parent concerns, parents' expression of need for education and support, and the need for better communication and collaboration throughout the process (Jin & Schmidt-Crawford, 2017).

Many additional areas surrounding the relationship between technology-infused parental involvement and learning outcomes, especially of young learners, are as of yet unexplored (U.S. Department of Education & U.S. Department of Health and Human Services, 2016). While we

know that parental *joining* in the learning process (as opposed to, say, homework checking) is one of the strongest predictors of student success (Jeynes, 2012), we do not yet know how this co-learning might be enhanced through technology (Blanchard & Oliver, 1999). Research is needed to determine the effects of parents and children sharing school activities together at home. More broadly, though the impact of one-to-one technology integration models on teachers and students has been widely examined, very little research yet exists that directly considers the impact of one-to-one rollouts on families, and how this may contribute to student learning. In *The Family-School Connection: Possibilities for Technology*, Blanchard and Oliver aptly describe the state of research: "We know from a broad base of research studies that connecting families and schools produced positive effects for children. We know that technology can produce positive effects on children, families, and schools. But what we are not sure of are technology's effects on the mix of families, schools, and the connections between them with regard to communication, instruction, and, most importantly, learning" (Blanchard & Oliver, 1999, pg. 68). By examining a school district's one-to-one experience with elementary families, this dissertation study presents data that may begin to uncover the connection between technology, families and student learning.

Chapter 3. Method

Introduction

This study explored the perceptions of K-2 parents immediately following the first year of a one-to-one iPad initiative in their child's classrooms. A large Indiana public school district provided the setting for the investigation, which invited input from all K-2 parents across the district's twelve elementary buildings. The study sought to ascertain how parents believe their child and family were impacted by the addition of the new learning tool. By collecting and analyzing perceptions of the iPad program's first year through the lens of parents, the researcher hoped to discover areas of need and to provide recommendations by which the district might support and enable parents as the initiative moves forward.

Four research questions drove this investigation. These questions were constructed based on discussion with district leaders and reflect their aspirations for the elementary iPad initiative. The research questions that guided this investigation are as follows:

1. What positive observations do parents have about their child's use of the iPad during the 2016-17 school year?
2. What concerns do parents express regarding their child's use of the iPad during the 2016-17 school year?
3. What do parents believe to be the advantages and disadvantages of taking the iPads home each day versus keeping the iPads at school overnight?
4. How do parents believe that the school district can provide further education and support to families with regard to this one-to-one initiative?

Research Questions 1 and 2 were designed to identify and document general parent perceptions of the first year with iPads. The purpose of Research Question 3 was to gather data

to inform future discussion on the value of having students bring the iPads home after school each day. Since allowing the iPad to come home was a decision made at the parent level, the researcher sought to understand how the iPads that were taken home each evening were used by students and families. To what extent did the district's vision of iPad as *home* cognitive learning tool (Jonassen, 1994) for students and families come to pass? Question 4 was born out of the researcher's interest in understanding parents' perceived needs concerning technology integration, and, potentially, the means through which they would prefer those needs to be addressed.

Research Context

This study took place in a rapidly growing, suburban school district in Indiana. The school district has recently become the state's fourth largest, with a total enrollment of 21,400 students as of April 2017 (Enrollment Report, April 2017). Of the district's twenty-one schools, twelve are elementary buildings (kindergarten through fourth grade); these buildings house approximately eight thousand students in grades K-4. The district has an impressive graduation rate – over ninety-six percent of eligible students across this district's two high schools earned diplomas in 2015-2016, the most recent year for which data is available. The overall poverty rate in this community is low but beginning to increase. The percentage of students receiving free or reduced lunch was 5.8% in 2005-2006; by 2016-2017, the rate had climbed to 14.1%. Recent ethnicity reports for this district reveal it to be only minimally diverse, with seventy-five percent of students identifying as white, 7.3% identifying as black, 6.2% as Asian, and 6.4% as Hispanic (DOE Compass, n.d.). Five hundred of the approximately four thousand K-2 students in this district (the grade band of this research study) qualified for English as a New Language (ENL) services during the 2016-2017 school year.

The one-to-one technology implementation in this school district is but one component of the district's much broader teaching and learning initiative that began in the autumn of 2011. The goal of the initiative has been to shift classroom instruction from a traditional teacher-centered, sit-and-get model to one that reflects what the past half-century of learning science has revealed about the learning process. Contemporary learning theory is constructivist; that is, knowledge is built, or constructed, as learners actively integrate pre-existing knowledge and beliefs with new information. In constructivist classrooms, student inquiry is fostered, depth is pursued over breadth, and understanding is pursued over the memorization of facts (National Research Council, 2000). As constructivist learning environments were the goal in the district under study, equipping students with digital tools at a one-to-one ratio became an important element of the change process. The mission statement of the initiative is as follows: *The mission of [school district name] is to equip students with the content knowledge, unique skills, and new literacies they will need to contribute positively in their communities and to succeed in the 21st-century global economy.*

Believing that emerging digital tools, in conjunction with the desired pedagogical shift, offered great promise to deepen and extend learning for all students, the district began to consider the prospect of a one-to-one technology program as part of the teaching and learning initiative. This resulted in a parent technology survey and the formation of a district Technology Steering Committee, composed of administrators, classroom teachers, parents, and high school students. Following the recommendation of the Steering Committee, a year-long iPad pilot was conducted during the 2012-2013 school year. Twenty-two classroom teachers, representing all grade levels, each received a cart of thirty iPads for their classroom for the entire school year. Designated the *1:1 Design Team*, these teachers were chosen through an application process

which sought evidence of pedagogical practices consistent with the initiative's mission. Once in place, the *Design Team* gathered for four full days of learning, training, and planning in the summer leading up to the pilot; the Team continued to meet for professional learning and collaboration one full day per month throughout the pilot year.

The Design Team's task was to incorporate the iPads into classroom instruction in ways consistent with the Substitution-Augmentation-Modification-Redefinition (SAMR) model of technology integration (Puentedura, 2009). The Team was also asked to collect data in the areas of student engagement, academic achievement, and 21st century skill development (Partnership for 21st Century Learning, n.d.), though it was left up to the teachers themselves how and exactly what data were collected.

At the close of the pilot school year (May 2013), funds were approved for the hiring of two district Instructional Technology Coaches. These new employees were initially tasked with conducting an iPad pilot year evaluation, planning for professional development, and coaching teachers ready to incorporate new technology tools into instruction. In November 2013, a Pilot Evaluation Report was delivered to the Board of School Trustees, outlining the to-date findings of the 1:1 Design Team.

Simultaneously, district administrators, in conjunction with the Design Team and the Technology Steering Committee, worked to construct a one-to-one technology rollout plan. The full plan – including professional development, infrastructure, and financial components – was presented to the Board of School Trustees. In early 2014, the School Board approved the purchase of an iPad and Apple TV for each K-12 classroom, funds for training to help teachers grow comfortable using an iPad in the context of instruction, and a three-phase one-to-one student rollout.

As of this writing in 2017, the district has, in fact, 'gone one-to-one' over a three-year period. The elementary rollout (2016 - 2017 school year) discussed in this study was the third and final phase of the one-to-one implementation, following grades 5-6 in 2014 - 2015, and grades seven through twelve in 2015 - 2016. The district is currently a one-to-one iPad environment in grades kindergarten through eight; the district's two high schools (grades nine through twelve) follow a Bring Your Own Device (BYOD) model. In all grades, families may choose to rent a device from the district (iPads K-8 and Dell laptops 9-12) for an eighty dollar per year fee, or they may provide their own device within district specifications.

Prior to the discussion of the elementary roll out detailed in this study, one other fact concerning this school district's recent history is pertinent. In the summer of 2014, the district's Superintendent announced his resignation from the corporation in order to accept a state-wide role. Shortly thereafter, in the spring of 2015, the district's Assistant Superintendent for Teaching and Learning was offered the superintendency of a neighboring school corporation; she resigned as well. The loss of these two district leaders, who had spearheaded and "owned" the district's vision for technology integration – and the subsequent year of interim administrators – likely impacted the development of a rich framework to support the digital learning vision long term, as well as the commitment to the resources and time needed to fully equip teachers, and to build understanding and buy-in among parents and the greater community.

Though employee training and framework development around digital learning stalled during interim leadership, the first two phases of one-to-one technology integration, grades 5-6 and grades 7-12, proceeded as planned. New district administrators came on board. These administrators championed the already-under-way constructivist teaching and learning initiative as a whole. They also allowed the iPad initiative to continue, but purposefully did not give it

institutional focus, since their community conversations indicated that parents did not understand the broader teaching and learning initiative; rather, they saw it as a technology initiative – parents feared that the initiative was a guise to promote online instruction. This belief on the part of administrators was fueled by a group of elementary parents opposed to technology in elementary school.

In the winter of 2016, as preparations were underway for Phase 3 (the K-4 rollout), a group of concerned elementary parents began to voice their opposition to placing mobile devices in the hands of young students. This opposition took the form of lengthy emails and letters to the Superintendent, Assistant Superintendent, and School Board, as well as the creation of an independent Facebook page and a blog site. In turn, a parent group *supporting* the technology integration appeared; these parents began their own Facebook page and writing campaign. Community dialogue culminated in a March 2016 meeting of the Board of School Trustees. Members of the community, both parents and teachers, spoke for and/or against the roll out; each member of the School Board gave a statement as well. The Board ultimately voted to allow the roll out to proceed as planned – with several clarifications and new stipulations.

One stipulation passed by the School Board is particularly central to this study. The district initially planned for all iPads to be 'take home'; that is, elementary students' personal devices would go back and forth between home and school each day, as was the case in grades 5-12. The district hoped that sending the iPads home would have several outcomes. They hoped to foster student-driven learning beyond the school day, promote the sharing of learning between parents and children, and increase home-school communication. Since some parents vehemently resisted the iPads coming home (stated concerns included responsibility, safety, security, and

fear of digital addiction), families in grades K-2 were given the option to leave student iPads at school. Parents were required to choose one option at the beginning of the school year – they were given the opportunity to change their preference once midyear.

Participants

The parents of all students who were enrolled in kindergarten, first grade, or second grade in this district during the 2016-2017 school year were invited to participate in this study, including those families who had left the district at the close of the school year. Survey data were collected during a two-week period in June 2017. A unique survey link was sent to each email address on file in both the Guardian 1 and Guardian 2 fields of the district's student information system. The researcher and the district believed that the wider reach provided by both Guardian fields was imperative: though more email addresses would preclude the ability to obtain a one-to-one correspondence between families and students, allowing only one survey link per family would have potentially left some parents unable to participate. A total of 8,497 survey links were sent; these represented 5,542 K-2 distinct households in the school district.

A total of 2,312 One-to-One Parent iPad Surveys were returned in this study. In 263 instances, more than one parent from within the same family completed the survey. Therefore, responses represented 2,047 households within the district, accounting for nearly 44% of the district's K-2 students. This survey response rate was particularly noteworthy since the survey was deployed after summer vacation had begun, and the survey window spanned only a two-week period.

The survey asked parents to identify each level for which they had a child enrolled in grades K, 1, or 2 during the 2016-2017 school year. As can be seen in Table 1, the number of

surveys submitted by kindergarten, first grade, and second grade parents was consistent across the grade levels.

Table 1

Responses By Grade Level

Grade	Number of Responses	Total Enrolled
Kindergarten	877	1495
First Grade	839	1555
Second Grade	872	1624

Response rates were also relatively consistent across the twelve school buildings represented. The number of submitted surveys for each of the district's twelve elementary buildings is shown in Table 2.

Table 2

Responses By School Building

School Building	Number of Responses	Total Enrolled
1	237	470
2	177	384
3	224	425
4	264	466
5	199	418
6	180	359
7	229	467
8	125	278
9	196	379
10	108	226
11	179	368
12	214	434

Families were given the option to rent an iPad from the school district for their child's use or to provide a personally owned iPad. One thousand four hundred twenty-seven survey

responses, or 62%, came from families who rented an iPad from the district for at least part of the school year. Eight hundred eighty-five responses were completed by parents who sent a personally owned iPad to school with their child.

Research Design

This study was constructed as survey research. Creswell describes survey research as a way to uncover the trends, attitudes, or opinions of a population (2014). As the goal of this study was to collect attitudinal information –parents' perceptions of the one-to-one initiative – it was important to develop a research design through which parents could freely express their thoughts and feelings (Rossi, Wright, & Anderson, 2013). Interviews and focus groups were considered and, ultimately, rejected for this study based on numbers. The school district in question is quite sizable, with nearly four thousand K-2 students in twelve different buildings scattered throughout an eighty-two square mile area. It would have been practically unfeasible to query a meaningful sample of adults representing all twelve schools if the data were to be collected face-to-face. As this researcher desired to give all K-2 families in the district the opportunity to voice their feedback, sheer numbers made a survey research design the most efficient means by which to collect data.

As a study design, surveys may elicit quantitative and/or qualitative data. This particular survey study design was intended to elicit primarily qualitative data. Qualitative research is driven by a desire to explain social behavior and thinking (Yin, 2014). Straub has shown that "technology adoption is a complex, inherently social, developmental process; …Thus, successfully facilitating technology adoption must address cognitive, emotional, and contextual concerns," (2009, p. 625). The current study considers these concerns from the vantage point of the families involved.

Data Source

Since this investigation sought to collect data based on particular experiences within one school corporation, a unique survey was constructed for the study. Questions were developed by the researcher in conjunction with the Research Committee and were created to specifically address the study's research questions. The school district was not involved in survey construction and did not vet the questions; the researcher was allowed to design the queries needed in order to 'get-at' the research questions. Survey questions were piloted by several district parents; feedback resulted in minor revisions being made to promote clarity.

The researcher's goal was to elicit candid, thoughtful, and thorough feedback on high-priority topics for parents; thus, the bulk of questions in this survey were designed as open-ended queries. Considering that each parent experience may have been uniquely influenced by the elementary building attended, a specific teacher's practice, family situation and/or other factors, it was hoped that unbounded text boxes would encourage in-depth responses. The full survey text can be found in the Appendix of this report.

Procedure

To recruit study participants, email addresses from the Guardian 1 and Guardian 2 fields of the district's student information system were electronically matched with unique URL survey links and deployed from the school district's password-protected Survey Monkey account. The district's Survey Monkey account was chosen for this study because completing surveys in this way was already a familiar process for parents. Each K-2 guardian email account received a message introducing the research study and a unique survey link. Parents were encouraged to provide feedback on their one-to-one experience via the survey.

Data were gathered over a two-week period beginning June 16, 2017. School had ended prior to this time; rented iPads had been returned to the district. Parents were informed of the survey opportunity via the district's family electronic messaging system twice – at the beginning and at the ten-day mark of the survey window.

Data Analysis

Data analysis began immediately following the close of the survey. The two primary tools that were used to aid in the analysis process were Microsoft Excel and MAXQDA Standard 12, a software designed for computer-assisted qualitative data analysis. Microsoft Excel was employed in the computation of response rates and other descriptive statistics; MAXQDA served as the primary text base manager for data analysis (Paulus, Lester, & Dempster, 2013).

A grounded theoretical approach was used in this study. Glaser and Strauss (1999) describe grounded theory is an inductive data analysis method in which theory is discovered from data which has been systematically obtained and analyzed. Theory development does not *precede* the research process, but occurs throughout it (Charmaz, 1996). In grounded theory, analytic codes and categories are developed *in situ*, as data is examined extensively in a spiraling, iterative fashion. Classification 'buckets' for data do not pre-exist in an *a priori* sense; rather, themes emerge and are refined from the data as it is considered and reconsidered. "A grounded theory analysis starts with data and remains close to the data," (Charmaz, 1996, p. 28). Grounded theory has been particularly appropriate for this study, as it has provided a framework through which to make conceptual sense of the very large amount of data gathered in the survey.

The analysis of open-ended responses began with the formation of a text database system in MAXQDA. Each submitted survey was given a unique identifier in the form Parent 1, Parent 2…through Parent 2312. The document system was created with data folders sorted by school

building and subdivided by individual question within each building's folder. This organizational structure enabled multiple frames for analysis: by individual respondent, by question, and by school building. Prior to designing this code system within the software, in order to gain an initial 'sense' of the data, the researcher read all responses to the question, "How can the school district better support you as a parent in regard to the iPad initiative?" This 'first pass' helped the researcher to identify several preliminary codes from which to begin more intricate data examination. With this base, parent comments were read methodically, one question at a time, and one school building at a time within each question. New thematic code words/phrases were created *in situ* throughout the analysis process. In some cases, the creation of a code in the analysis of one question was followed by the creation of the same code in the analysis of another. These cross-question codes led to the emergence of several significant themes that will be outlined in Chapters 4 and 5.

The most complex responses to evaluate came from Survey Question 16, "Please describe your reason for this rating," referring to the Question 15 query about program satisfaction levels. Some Question 16 comments were quite lengthy; and parents often offered both positive and negative feedback within the same comment, regardless of what their Likert response had been. Each comment was read multiple times by the researcher in hopes of extricating expressed nuisances from deeper parent beliefs about school and learning. Three categories were created within MAXQDA to begin the Question 16 coding process: Positive, Negative, and Neutral. Codes were created *insitu* as comments were read – as codes were created, they were placed underneath one of the three categories. It was not uncommon for one parent comment to contain codes in at least two of the three categories.

As coding was pursued, themes naturally arose within and across survey questions. Themes were checked as the data was revisited iteratively, reconsidered through a variety of lenses: by question, by school building, and by student grade level. Themes were consolidated, organized, and reviewed by the researcher. Each theme was tied to multiple parent comments for evidential support.

Trustworthiness

To insure trustworthiness, data samples and thematic results were reviewed by two experts unconnected to the study. The first reviewer, the researcher's colleague, is an instructional technology coach in the district under study. This instructional technology coach is well versed in the best practices of technology integration in general, and aware of the backstory of this district's one-to-one journey in particular. The second outside reviewer was a senior associate from a national educational technology consulting firm; this consulting organization conducts evaluations and research studies worldwide in the field of PreK-20 education technology. It was believed that the input of these two experts – one with a deep understanding of the study's setting and the other with a national research perspective – would help to insure credibility of the researcher's findings.

Each outside reviewer was asked to read qualitative data samples from the survey and to comment on what words, ideas, or themes stood out to them. The researcher took notes in her meetings with reviewers, and later compared these notes to her own coding notes, looking for similarities and differences. Perhaps because parent survey comments were on the whole very straightforward, no conceptual differences were found between the researcher's emergent themes and those themes suggested by the reviewers. Interestingly, in reading the same data samples, Reviewer 1 tended to draw out the program management and teacher readiness concerns of

parents. Reviewer 2 most often pointed out communication themes. Both of the reviewers' findings, however, were included within the thematic scope of the researcher.

The reviewers were also asked to consider the researcher's emergent themes next to data (the particular parent comments) which had been used to identify and support each theme. Were the comments used as justification accurately linked to each theme? Again, perhaps because of the straightforwardness of many parent comments, no misalignment was found. Once the data and themes had been examined, the reviewers were invited to ask questions. Both reviewers had future-facing queries, such as, "So, how will the district get this information?" and "Where do you go from here?" As for data analysis, however, both outside reviewers agreed that themes were consistent with the survey data and supported the findings. All data were stored on the researcher's computer which was locked when not in use.

Trustworthiness was also ensured through a cross-check of parent responses across multiple survey questions. That is to say, within the data set as a whole, did a given parent repeat similar views in his or her answers to multiple questions? Did parents offer confirmatory responses throughout the survey? Participant responses were found to be highly repetitive and consistent across the survey. These confirmatory results added to the trustworthiness of data analysis.

In conducting this investigation, the researcher has been well aware of her place as an insider of the organization under study. Berger (2015) and others have written on the complex concept of reflexivity, that is, "the process of a continual internal dialogue and critical self-evaluation of researcher's positionality as well as active acknowledgement and explicit recognition that this position may affect the research process and outcome," (p. 220). As an Instructional Technology Coach in this school district, the internal validity of the current study

has hinged on this researcher's ability to be aware of her positionality and to critically self evaluate. Though the researcher's perspective may be evident if not obvious, her biases and assumptions may be illusive to herself and others (Merriam & Tisdell, 2015).

Considering reflexivity from another vantage point, Yin (2016) contends that particular conflict can arise when a researcher is a member of the organization under study, because "complicated power and supervisory implications" may arise (p. 46). Yin encourages researchers to ponder possible effects when planning research, and to remain transparent in research processes. In the present case, the researcher has been aware that her work is situated within a potentially problematic setting. The researcher's supervisor, as well as other close colleagues, have played direct roles in this district's iPad implementation. To maintain personal research integrity as she has analyzed and reported on parent perceptions, it has been necessary for the researcher to continually resist developing anxiety over how her supervisor and colleagues might react to the study's conclusions. To be clear: the researcher has been given no cause for apprehension; rather, an awareness of this situation is one step in her journey of reflexivity.

Chapter 4. Results

Introduction

The purpose of this study was to gather and explore the perceptions of K-2 parents following the first year of a one-to-one iPad rollout in one Indiana school district. Four research questions guided the investigation. Research Questions 1 and 2 sought to uncover parents' views on positive and concerning aspects of the initiative, and Research Question 4 sought to define practical suggestions as to how the district might provide education and support to parents regarding the iPad tool and program as the district initiative continues.

Research Question 3 was written to specifically investigate one particular feature of this school district's iPad initiative; that is, the option given to parents of allowing the iPad to travel home each evening with the student, or of requiring that the device always remain at school. Specifically, the researcher sought to understand if and how "take home" iPads were used at home by students and families, and what parents believe to be the advantages and/or disadvantages of having the iPad available at home.

In order to address the salient aspects of this particular district's iPad initiative, data for the investigation were gathered using a survey instrument designed specifically for this study. The current chapter will present results of the data gathered in Survey Questions 4-17, the open-ended queries. Survey Questions 1-3 were demographic in nature and were discussed in the Participants section of Chapter 3.

Survey Questions 4-6: Travel Options

Critical to Research Question 3 is the number of families who allowed the iPad to travel home after school each day. Parents chose a "stay at school" or "take home" option at the beginning of the school year. Some parents changed their preference mid-year. Data on file in

the district learning management system indicated that as of September 2016, 69% of respondents allowed their student to bring the iPad home each day, and 31% requested that the iPad remain at school. By May, near the close of the school year, the numbers had shifted in favor of bringing the iPad home, with 77% as take-home, and 23% as stay-at-school. It is important to note that this change does not indicate exclusively a one-way shift, though that is certainly the trend. Two hundred sixty survey respondents indicated a change *towards bringing the iPad home*, and seventy-two respondents changed their decision *in favor of keeping the device at school*.

Survey respondents who changed their take home preference mid-year were asked to briefly describe why. Over three hundred comments were submitted. Six themes emerged from parents who ultimately allowed the iPad to come home (no-to-yes): *Responsibility*, *Teacher/School Recommendation*, *Awareness of School Activities*, *Child's Request, Apps/Updates,* and *Homework/Skill Practice*. Table 3 lists these themes and offers sample comments in each category.

The most common reason given for a no-to-yes change was a parent's desire for his or her child to have evening access to apps for homework and/or skill practice. Curiously, one parent stated, "Some of the homework required time on the iPad," [Parent 975]; if accurate, this would signify a clear departure from the district's position that the iPad would not be required for at-home work. Indeed, a thorough reading of all comments in this category makes clear that either some teachers, in fact, did require use of the iPad at home, or that parents interpreted teachers' words as such. It is also of note that twenty-six parent comments indicated a decision to ultimately bring the iPad home because the teacher or school "encouraged" them to do so. More information would be needed to understand the full context of each case; however, this may also

signify a departure from school district commitments. These and other instances of possible unclear communication regarding the iPad program will be reviewed in Chapter 5.

Table 3

Take Home Preference: No-to-Yes

Theme	Frequency	Comment
Responsibility	23	"I wanted to make sure my 1st grade son was responsible enough to transport back and forth and just use good common sense with the iPad." [Parent 1007]
		"Kindergartener showed he could manage the responsibility." [Parent 1557]
Teacher/School Recommendation	26	"Our daughter's teacher told us that it would be best for them to bring it home." [Parent 758]
		"The school asked us to bring them home because they didn't have enough charging carts to support all the iPads to be charged each day." [Parent 2166]
Awareness of School Activities	32	"It allowed us to be more engaged in what the iPad was used for at school." [Parent 2176]
		"It also allowed us as parents to become familiar with what our child was doing." [Parent 1210]
		"We received no paperwork highlighting anybody [sic] her school work discuss [sic], reinforce, and see what she was learning. Did not like this at all. Felt very disconnected on what she was being taught and what she was learning. Thought bringing the iPad home might let us interact with her learning. Became more of a YouTube viewer." [Parent 1017]
Child's Request	10	"My child complained that everyone was allowed to bring it home." [Parent 785]
		"Her older brother brought hos [sic] home and she wanted hers as well. We decided not to fight that battle." [Parent 545]
Apps/Updates	25	"Apps needed to be added so it just made it easier for it to come home." [Parent 1411]
		"Apps were added throughout the year, so it was good to have it at home daily to make sure the app was updated timely." [Parent 1210]
		"Had to load software" [Parent 1902]
Homework/Skill Practice	69	"Extra practice at home" [Parent 1606]
		"Use of reading apps" [Parent 1768]
		"Some of the homework required time on the iPad" [Parent 975]
		"It became a hassle to get his homework done without it" [Parent 773]

The desire to be more connected to school work and activities was presented as another reason for ultimately opting to send the iPad home. This theme, parents' desire to be aware of

their child's learning experiences, appeared in numerous open-text comments throughout the survey and will be discussed when recommendations are considered.

Management of the iPad led to a decision change for some. Though stay-at-school iPads (whether personally owned or rented) were to receive needed apps and updates by the teacher, some parents reported that this became cumbersome. "I wanted the iPad to stay a [sic] school…the teacher struggled with this and still had to send home for downloads," noted Parent 868. Parent 1759 stated, "We had to go to school to download new apps which wasn't easy to do w/ [sic] work schedules." Further investigation would be needed to uncover precise causes for these differences; however, access issues to individual iPads (restriction and/or iCloud passwords) are likely involved.

Seventy distinct parent comments were made by those who changed their take home preference from yes to no during the school year. These comments aligned into four themes as shown in Table 4. The themes *Created Conflict at Home* and *Child Obsessed with iPad* initially appear to overlap, as it is certainly true that dealing with one's technology-obsessed child may trigger conflict in the home. The distinction made by the researcher, however, is one of degree: comments categorized in the latter group exhibited a clear feeling on the parent's part that their child had become dependent on the device in unhealthy ways, as expressed by Parent 522. "We discovered he was using the iPad from 10pm-4am [sic] and hiding it from us."

A surprising finding in yes-to-no parent comments was the number of parents who believed the iPad was sent home against their wishes. Fourteen parents commented that they had no choice but to allow the iPad to travel to and from school, a direct contradiction to one of the commitments made by the Superintendent to K-2 families prior to the rollout. The majority of these fourteen comments cited a lack of classroom charging stations as the reason the iPads were

sent home. The district had publically stated that they had purchased charging carts for each school building based on the number of stay-at-school iPads.

Table 4

Take Home Preference: Yes-to-No

Theme	Frequency	Comment
Created conflict at home	13	"We didn't want to fight the constant "can I play on it" scenario" [Parent 660]
		"Our child was spending too much time on his iPad, and it was becoming difficult to manage it appropriately." [Parent 2057]
Sent home against our wishes	14	"Before the program was implemented, I was told the iPad could stay at school if the student was k-2. However, once the school year began, I was told by the teacher that she did not have a charging cart and only a limited number of outlets in her classroom, so all the first grade students in her class would have to take their iPads home on a daily basis to charge. (Interesting to note, while she did not have (or ever get) the promised charging cart for her classroom, the school installed a large Lego wall and a new Parkour playground.)." [Parent 1281]
		"My child was one of the few students in the class to keep the iPad at school. My child felt very excluded and wanted to bring the iPad home. Eventually, my child's teacher removed the class charging station and keeping iPad at school became no longer an option. I did not change my opinion but it was rather forced to change the way it was handled." [Parent 23]
Child Obsessed with iPad	27	"Having an iPad at home created a lot of tension and behavioral problems from my children, who spent every waking hour fixated on it." [Parent 2089]
		"My son started exhibiting signs of technology addiction. We discovered he was using the iPad from 10pm-4am [sic] and hiding it from us. Additionally, we later discovered that he and other students were messaging each other and sharing their GPS locations using the Apple app "FindFriends" which can not [sic] be deleted as it is an Apple program. The kids were messaging each other through the night." [Parent 522]
		"It was a distraction in the evening and child constantly wanted to be on it during family time." [Parent 208]
Breakage Concerns	16	"Because we didn't use it at home... the screen cracked in transport from home to school and back." [Parent 1390]
		"It was incredibly unclear the options that were available. I was very nervous about a 7 year old [sic] toting such an expensive item back and forth every day but I wasn't given a choice since we didn't rent and were responsible to charge. It was frustrating." [Parent 205]

Questions 7-12: iPad Home Experiences

The purpose of Research Question 3 was to gather information from the subset of parents who allowed their child to take the iPad home each day. The researcher desired to learn if and

how the iPads were used at home by students themselves, and by students and their families together. The 1,578 parents who responded 'yes' to survey Question 4, "Did you opt for your K-2 child to bring home his/her iPad for any portion of the school year?" were led to a branch of the survey with questions on home use.

This survey branch began by asking the 1,578 take-home parents if their child used the iPad at home for a series of potential iPad activities. Each activity option listed examples to aid in clarity. For example, the activity "Communicate with his/her teacher and/or classmates" was followed by these examples: email, messaging, Seesaw. The activity "Communicate with extended family and/or friends in other places" was followed by the examples Skype, FaceTime, and photo sharing. For each potential iPad activity listed, parents were asked to select between "yes", "no", and "I don't know".

A total of 1,484 parents responded to this question, indicating the extent to which their child used the iPad at home for each activity listed. Table 5 summarizes parents' perceptions of how the iPad was used at home by their child. *Build Academic Skills*, *Create or Design Things Based on Personal Interests*, and *Play Educational Games* drew the most responses, each with over a 70% "yes" rating. The activity least selected by parents was *Communicate with Extended Family and/or Friends in other Places,* yet this prompt still produced a 41.6% 'yes' rating. Notably, though the least-selected choice, 41.6% equates to over 600 children for whom the iPad served as a family communication tool.

Prior to the roll out, some K-2 parents had expressed fear of the iPad becoming a 'toy' at home. In an attempt to gauge entertainment versus educational use of the iPad at home, Question 7 included both educational and/or entertainment options for games and videos. Parents were asked to rate both *Play Educational Games* and *Play Entertainment Games*, as well as *Watch*

Video Primarily for Entertainment and *Watch Video in Order to Learn New Information or a New Skill*. Both types of game play, entertainment-based and educational, received high 'yes' scores, with educational game playing noticed by parents in nearly 79% of cases, and entertainment games seen in 61% of cases. This preference flipped for video; a higher percentage of parents reported that their child watched videos for entertainment (65%) than to learn new information (56%). However, both types of viewing were observed at over a 50% level.

Table 5

iPad Home Use

Activity	Yes	No	I Don't Know
Build academic skills	1173	290	18
Communicate with his/her teacher and/or classmates	625	803	44
Communicate with extended family and/or friends in other places	612	844	16
Create or design things based on personal interest – not school assigned	1084	373	21
Create or design things for school projects	781	630	60
Research to learn about topics of personal interest	905	523	42
Play educational games	1162	294	18
Play entertainment games	906	554	17
Watch video primarily for entertainment	956	502	17
Watch video in order to learn new information or a new skill	825	581	65

In addition to how students used the iPad at home, the researcher desired to gather information about any sharing or co-learning between parents and children that came about as a result of the iPad being accessible at home. Question 8 asked, "Did you and your child use the iPad together at home this year?" Answer choices were "Often", "Sometimes", or "Not at all". Of the 1,487 respondents who answered this question, 338 answered "Not at all." Eight hundred seventy-seven parents responded sometimes, and 272 parents responded "Often".

Table 6

Parent-Child Home iPad Activities

Theme	Frequency	Sample Responses
Play Games	140	Playing games together [Parent 1161]
		Played family games such as Word, Golf games, and other competitive games. [Parent 2093]
Communicate	58	"Skype or FaceTime" [Parent 1144]
		"We FaceTimed when she had to be at her dad's house. The ability to do this was instrumental in helping her adjust to the new routine of shared parenting." [Parent 141]
Share School Day	157	"We used it to look through his educational software together and learn what he was learning and had him show us things that he worked on or was learning." [Parent 1166]
		"Reviewing things he wanted to show me that he learning at school" Parent [1777]
Create Multimedia	120	"Take and look at photos together" [Parent 237]
		"Created picture collages and videos" [Parent 2243]
View Multimedia	201	"Look at pictures and videos" [Parent 1231]
		"We watched a lot of educational videos together on explore.com" [Parent 24]
Research/Study Topics of Interest	221	"Mostly researching topics on Google" [Parent 1657]
		"When he has a question, we look up the answer" [Parent 1749]
Practice Skills	357	"Math facts" [Parent 1083]
		"We learned computer coding games" [Parent 1012]
Read	274	"Reading digital books" [Parent 175]
		"Books" [Parent 442]
Complete Homework or School Projects	94	"Homework" [Parent 542]
		"Mostly for school work or projects" [Parent 1416]

Seventy-seven percent of survey respondents who took the iPad home (1,149) responded that they used the iPad with their child "Sometimes" or "Often". This subgroup was asked the follow-up question: "What types of activities did you do together using the iPad?" Parents were provided an open text box and asked to volunteer their own activities. Many parents listed several activities in their response. Analysis determined nine oft-repeated categories. Parents

who allowed the iPad to travel home reported that the tool helped them to *Share the School Day* with their child. Many reported using the iPad to *Play Games*, both educational and/or entertainment-related. Families used the iPad together to *Communicate* with family and friends, and to both *Create Multimedia* items and *View Multimedia* (primarily videos) together. Parents worked with their children on *School Homework and/or Projects* using the iPad, and they used the device to *Research and Learn About Topics of Interest* together. The two most frequently shared activities were to *Read* (274) and to *Practice Skills* (357). Table 6 lists the nine themes, frequency of occurrence, and sample parent responses.

Questions 13-14: iPad Classroom Experiences

Survey Question 13 used an open-ended format to ask parents, "Do you have any positive observations from your child's classroom use of the iPad this year?" One thousand one hundred ninety-seven parents offered a response; these responses varied from a simple "yes" or "no" to lengthy recountings of perceptions of the program. Comments consistently fell into one or more of eight distinct themes. Two of the eight themes were created from those parents who responded with a *Simple Yes* or some version of *No*. Some parents mentioned as positive the fact that they had observed an increase in *School Enjoyment and Engagement* or *Agency and Responsibility* in their child as a result of the 1:1 initiative. Others mentioned access to *Apps for Learning* as a positive result. Still other parents commented on their child's access to information for *Research and Research Skill Development*, or *Technology and iPad Skill Development*. The theme of *Shared Learning* garnered the most comments, with 287 parents noting as positive the ability to share in what their child was doing/had done during the school day. One hundred sixty-two parent comments specifically mentioned Seesaw, an application designed to connect home and school. One hundred sixty of these Seesaw comments were highly positive. Some parents

reported an affinity for Seesaw because it became a window into the classroom for them; some noted that it enhanced communication with their child by fostering dialogue with their child after school. Parent 2060 offered, “Instead of ‘What did you do today?’ I was able to say ‘I see you did __...tell me about that.’" The two parents who mentioned Seesaw negatively believed that it promoted a culture of social media in the class which was detrimental to the wellbeing of children. An explanation of each positive theme, with frequency of occurrence and sample comments, is found in Table 7.

In addition to the eight common themes shown in Table 7, two other parent comments deserve note. Parent 365 commented, “I loved the seesaw [sic] app. My child is an ENL student, so it was great to actually get some inside scoop from the classroom because I didn't get a whole lot of verbal communication from her at home.” Parent 2077 stated, “They could use their iPad as a translater [sic] because they are ENL students.” Considering that 500 of over four thousand K-2 students in this district were classified as English as a New Language (ENL) students for the 2016-17 school year, it seems likely that this advantage might be shared by additional families who did not complete the survey.

Table 7

Positive Observations

Theme	Frequency	Comment
Enjoyment/ Engagement	88	“He liked using it.” [Parent 1659]
		“It was something that got my child excited about going to school sometimes and when she could bring home "something" new to share...or a skill on it she learned.” [Parent 1765]
		“Yes he often expressed joy and interest in the programs provided on the iPad at school.” [Parent 1955]
Apps for Learning	190	“We were pleased with the XtraMath app our son used on his iPad. We also liked how his class used their iPads to record themselves giving presentations; this is great practice, especially at the first grade level!” [Parent 618]
		“They learned coding. Kids A-Z and MobyMax were great apps.” [Parent 1162]

Theme	Frequency	Comment
Research/ Research Skills	69	“She learned modern research techniques. It's been fun being able to tell her, ‘Have you tried to look it up?’" [Parent 81]
Technology/ iPad Skills	109	“She's far more comfortable with technology than I.” [Parent 1213]
		“Yes, technology skills improved” [Parent 1295]
		“It was a great learning tool especially for today's world. I think it is a great jump start to knowing how to use technology.” [Parent 774]
Student Agency/ Responsibility	23	“The ability for her to learn how to take responsibility for her things.” [Parent 629]
		“I noticed my daughter will now research certain classroom topics on her iPad. She is more resourceful.” [Parent 1933]
		“My son's use of the iPad improved over the course of the year, including his ability to find apps to support what he wanted to learn.” [Parent 173]
Shared Learning	287	“The iPad provided a great window into their school environment. I saw many things (especially with Seesaw) that I wouldn't have gotten to see as a working single mom who cannot get into the classroom.” [Parent 174]
		“It was great to see frequent posts and comments of what was happening in the class. It expanded dialogue at home. Instead of "What did you do today?" I was able to say ‘I say you did __...tell me about that.’" [Parent 2060]
		“I really enjoy her being able to bring it home and show me work that's been done in the classroom on it! Plus it beats the heck out of playing 20 questions at the bus stop about her day, the answer to 90% of which is ‘I don't remember’.” [Parent 642]
Simple Yes	163	“Yes” [Parent 736]
		“It helped my son.” [Parent 613]
		“In class his teacher was amazing and wonderful so absolutely yes.” [Parent 469]
No	257	“I feel my first grader hardly wrote anything by hand. I am not even sure if my now 2nd grader is able to write a few simple sentences in a somewhat proper handwriting.” [Parent 785]
		“While school should ideally be interesting and engaging, it does not need to be all entertainment. Learning to sit, listen, and pay attention is not getting much attention in my opinion and that will not serve our children's generation well.” [Parent 2206]
		“Very little. Our daughter referenced the use of Epic for reading and other apps for math fact fluency. I saw no indication of iPad use for exploration/research, media production/creation, nor communication with peers or teachers. We also did not observe any age appropriate digital citizenship instruction.” [Parent 1571]

Survey Question 14 asked parents, “Do you have any concerns regarding your child’s classroom use of the iPad this year?” Parents offered 1221 comments. The remaining survey respondents left the question blank. Five hundred twenty-five persons answered some version of

"no", indicating that they had no concerns regarding classroom use of the iPad. A preliminary reading of remaining responses found them to be of two types: concerns based on actual incidents or experiences, and *potential* concerns, i.e., comments that expressed ongoing worry or fear regarding the 1:1 program. For example, forty-nine parent comments concerned iPad *Safety and Security*. In twenty-three instances, these comments voiced concern based on a situation that had occurred during the school year. "When my child was searching," remarked Parent 939, "Images I didn't care my child to see were discovered. Searching for Sweden led to the Swedish bikini team. Not the most reassuring." Alternately, twenty-six comments conveyed concern of what *could be.* Parent 1348 said, "My biggest concern is the internet safari [sic] on their iPads…There are too many things that pop up that are not meant for children's eyes," and Parent 1905 commented, "Cyberbullying is always a concern, but we haven't experienced anything."

A total of nine themes emerged from concerns expressed by parents. Along with *Safety and Security* were concerns reflecting overall *Philosophical Opposition* with the program, the belief that K-2 students in particular are *Too Young* for a 1:1 program, and/or the belief that 1:1 is *Unnecessary* at these grade levels. Some parents mentioned concern about the program due to its *Cost* to families, some believing that *Not Enough Time* was spent on the iPads in their child's classroom to justify this cost. Contrarily, some parents believed that *Too Much Time* was spent on the iPads at school, and still others believed that the iPads had been *Used Improperly* in the classroom. Finally, seventy-four parent respondents expressed an uncomfortable ambivalence – stating that they had no idea how the iPad had been used in the classroom. Many of these parents specifically mentioned *Poor Communication* from the teacher as their reason for uncertainty. Table 8 presents each theme of parent concern, along with frequency of occurrence and comments exemplifying the theme.

Table 8

Parent Concerns

Theme	Frequency	Comment
Safety and Security	49	"I am concerned about their access to inappropriate content, either on their own iPads, or by viewing it on someone else's." [Parent 1666]
		"I am concerned that too much freedom seems to be expected for first graders to have. For example, there were numerous times that my child said they needed an app, or access to a website, and this was not communicated to us by the staff. It seemed that we were expected to leave all parental controls turned off, so that staff or the student could install whatever, and go wherever they wished. I am very concerned that we, as parents, don't seem to be given an opportunity to help choose what our child has access too, and more importantly, that the safeguards we try to place seem to be treated as an inconvenience by the staff." [Parent 80]
Philosophical Opposition	25	"Nothing foundational in education should rely on batteries." [Parent 523]
		"Plenty. As stated above the art of being a teacher is now fading, either through complacency and relying on the iPad to do the lesson plan and teaching." [Parent 68]
Too Young	51	"I do not like my children forced to used devices this young." [Parent 1004]
		"I feel strongly that K-2nd grade is too young. Their minds are still very innocent & trusting. So having access to the "world" exposes them to things that put them at risk. As was the case with our 1st grade this year. The things our child saw and learned can't be undone and changed many dynamics for our family. None of which were appreciated." [Parent 1035]
Unnecessary	47	"I did not see a benefit at this age. I feel it over complicated things and wasted time (for both the teacher and students)." [Parent 1291]
		"Don't really see that it's necessary for them to use." [Parent 2038]
Cost	37	"I was socked with a $70 screen replacement bill. Since it stayed at school, I had no way to avoid this cost. It is bad enough that we have to pay $90 for it at the beginning of the year. Then we get stuck with fees at the end. If it is mandatory, it should be part of the free public education." [Parent 1634]
		"This felt like I was sucked into a scam. The consequences far outweighed the benefit to my child. I was not given a choice to opt out of my child using an IPAD [sic]. I was forced to rent one and it was supposedly damaged at school and I was not notified that it happened to know if my child even damaged it which tells me that this was not a well though out decision. I checked the option to have this piece of equipment kept at school at all times and if proper supervision cannot be provided then I think this is something that should wait until the children are old enough and a proper case can be provided for these rentals…We should have been warned that a proper case would not be provided and that these were not properly supervised. This whole situation is a fail and wildly inappropriate at every facet. I'm out almost $200 for a rental. The school should have protected it's [sic] piece of equipment and tried to avoid penalty for the parents. I have now list trust in the school that they are sucking us into a one-sided deal." [Parent 2008]
		"Book fees still high." [Parent 976]

Theme	Frequency	Comment
Not Enough Time	47	“For the stress it took to make sure she had one, I don't think they used it enough throughout the school year.” [Parent 1011]
		“Not used enough in the classroom to warrant having the iPad” [Parent 1227]
		“They didn't use it. [Name] wouldn't bring hers home when we sent it with her, so we stopped sending it. This was never a problem. 90% of the time, she didn't even take it to school.” [Parent 835]
Too Much Time	64	“I want less screen time!” [Parent 853]
		“There is concern with the iPad being used too often in the classroom. And in replacement for teaching and learning times that K-2 classes would grow and benefit more without the iPad.” [Parent 1643]
		“Yes, too much screen time. And I want to see the work they are doing. On paper” [Parent 2293]
Used Improperly	106	“Yes. When I would go in to volunteer the kids would all be on their iPads, some sitting in the closets even. There is no way the teacher knew what all of the children were doing. This is concerning to me as they could be googling or wasting time. My son came home one day saying something about watching Five Nights at Freddies [sic] videos on his friends iPad.” [Parent 1039]
		“My child often bragged about being in different apps than what he was supposed to be in. While I talked to him a few time [sic] about why his decision was wrong, he didn't change his habits. He would just tell me, "The teacher can't see what I'm doing on my iPad when she is at her desk or walking around. I just go to the app I should be in when I see her coming over." [Parent 702]
		“Yes. I volunteer in the school and often saw (and heard about) children using iPads for gaming during recess and break (when it's not supposed to be allowed), I heard about constant use on the school bus from my child (also not supposed to be allowed), and no one within the district can provide us parents with proof that this is better for my child's education. Many of us have repeatedly asked what kind of metrics are going to be used to accurately chart this implementation, and not once have any of you given us an answer.” [Parent 1036]
		“Yes. The Xtra math [sic] app was not an effective way for our child to practice arthimetic [sic] facts. The sounds and count-down caused anxiety. He was reading books far below his level in the reading app they used (Raz kids [sic], I believe). The gameification of reading was not helpful for him; he used to read for pleasure, now he wants to be entertained and get points. [Parent 1332]
Poor Communication	74	“I wish the emphasis and communication was maintained during the entire year. I saw less and less as the year went on.“ [Parent 483]
		“There wasn't much feedback as to how they were using the iPad. A list of apps and maybe sample work so we could see the apps at home.” [Parent 224]
No Concerns	525	“No, all of the interactions were positive.“ [Parent 428]
		‘Not at all – great use of technology for even young age.” [Parent 882]
		“I do not have any concerns at the moment.” [Parent 1389]
		“No, I think his teacher had the students use their iPads the appropriate amount of time on things that would help improve their educational experience.” [Parent 641]

Questions 15-16: Satisfaction Levels

Due in part to strong parent feelings expressed prior to the roll out, the researcher felt it imperative to gauge K-2 parents' overall satisfaction with the iPad program in its first year. Survey Question 15 asked parents to rate their level of satisfaction with the iPad initiative on a Likert-type scale. Question 16 asked them to describe their reason for this rating. Satisfaction levels are shown in Table 9, and reinforce the disparity in parent feelings of the program prior to its inception. Of the 2,107 parents who selected a satisfaction level, over 21% were "Very Satisfied" with the program in its first year, and another 37% were "Satisfied". Taken together, 58% of parent respondents expressed a positive feeling as they looked back on the K-2 iPad initiative in its first year. An additional 508 respondents, or 24%, reported being "Neither Satisfied nor Dissatisfied" with the program. In this group, several parents mentioned that they were withholding judgment until 2018, since the first year of any new initiative may be bumpy.

Table 9

Parent Satisfaction Levels

Satisfaction Level	Percentage	Number
Very Satisfied	21.5%	452
Satisfied	37.2%	783
Neither Satisfied nor Dissatisfied	24.1%	508
Dissatisfied	10.5%	221
Very Dissatisfied	6.79%	143

A smaller but passionate group of parents expressed a different view. A total of 364 parents reported being Dissatisfied or Very Dissatisfied with the iPad initiative – approximately 17% of the total. The most vehement comments from this group, as expected, were those who

expressed a philosophical opposition to technology in school for students, especially students of this age.

Table 10

Satisfaction Level Themes

Positive	Negative	Neutral
Independence/Responsibility	Low Cost/Benefit Ratio	Unnecessary but Acceptable
Engagement	Underutilized	Pros and Cons
Skill Development	Misused	
Rental Option	Too Much Screen Time	
Leave at School Option	Distraction	
Home School Connection	Internet Safety/Security Worries	
Balanced Classroom Use	Program Issues	
Needed in Digital World	Teacher Issues	
Overall Good Experience	Philosophically Opposed	
	Detrimental to Learning	

A majority of survey respondents, 1,348, described a reason for their satisfaction level ranking (Question 16). As described in Chapter 3, Question 16 presented the most complex data to analyze, since parents often embedded both positive and negative feedback within one lengthy comment. Often, the analysis of one parent comment resulted in one or more positive codes AND one or more negative codes. For example, Parent 500 said, "I have mixed feelings about it. On one hand I thought it was beneficial because it was another tool for learning and opened a door for creative thinking with all the cool apps available. But on the other hand, it created stress in our home from our son constantly wanting to be on it playing games. I wanted it to come home so I could see what he was working on at school and I liked that he could practice math and reading on it at home, but I'm not sure it was worth it in the end. I may have him leave it at school this year." The Neutral category had the fewest comments, as only statements of the most general nature were codified here. Satisfaction level themes are listed in Table 10. Parent comments illustrating the ends of the spectrum, Very Satisfied and Very Dissatisfied, are presented in Tables 11 and 12.

Table 11

Parent Comments: Very Satisfied

Theme	Comment
Independence/Responsibility	"She loved having it and made her more independent" [Parent 1939]
	"My child only benefited from the iPad program. I also feel it gave him more responsibility in regards to making sure he brought it to and from school" [Parent 1991]
Engagement	"My child grew tremendously with the enhanced learning. He is excited about school and loves coming home and teaching us about his learning." [Parent 50]
Skill Development	"I think the children using the Ipads [sic] help with developmental skills." [Parent 84]
	"Felt it was a good tool to have boosted reading" [Parent 1210]
	"I feel like the IPads [sic] were used to reinforce learning in the classrooms, not to entertain the children. The apps that were on my child's IPad [sic] were educational and she enjoyed using them to practice the skills she was working on in class." [Parent 408]
Rental Option	"Affordable and my son cracked his screen and it was only $75 to fix where if it had been our own it would have cost more" [Parent 1676]
Leave at School Option	"…I liked that she could keep it at school…" [Parent 1503]
	"Since we chose to leave the iPad at school we had very little work to do, I know for the other options parents had to download different apps, We also didn't have to worry about making sure it made it to and from school." [Parent 720]
Home School Connection	"It was a great way for me to see daily what my child was doing in class and the things he was learning." [Parent 1779]
Balanced Classroom Use	"I was very pleased with how the iPad was used very intentionally in the classroom. I did not feel they were overused. The apps built on the learning that was taking place in the classroom. I especially enjoyed the documentation of his learning and parent communication." [Parent 429]
	"Was used as needed but not overly used. Great additional educational tool You all did a great job communicating the "production over consumption" goal for the iPads. My daughter's teacher incorporated the iPads well into the curriculum so that technology enhanced learning." [Parent 183]
Needed in Digital World	"Technology is essentially the leading factor in driving our economy and education. It's important to get these devices in our children's hands as early as possible to allow optimal growth and familiarity." [Parent 526]
	"I don't see a downside. The world is moving at a furious pace toward more technology and innovation." [Parent 730]
Overall Good Experience	"Went very smooth" [Parent 857]
	"I had no complaints" [Parent 1879]

Table 12

Parent Comments: Very Dissatisfied

Theme	Comment
Low Cost/Benefit Ratio	"I don't believe the iPad's [sic] are providing a good ROI for classroom use" [Parent 1978]9ol
	"I would send them to school charged at 100%, they would come home still in the 90% which says to me for the money I had to pay, they did not get used that much." [Parent 574]
	"As mentioned before, my child's teacher didn't use them until Spring semester other than for standardized testing! What a waste of money!!" [Parent 905]
Underutilized	"It was rarely used. Spending $90 on the use of an iPad was ridiculous." [Parent 1299]
	"My child hardly used it" [Parent 1468]
Misused	"Our child played games for entertainment and watched videos for entertainment – not for educational purposes." [Parent 881]
	"…no matter how many times we were told the kids would *only use the ipads [sic] for educational purposes* the school simply cannot monitor hundreds of 2nd graders with screens." [Parent 738]
Too Much Screen Time	"Hours spent on the device far exceed what we were told would be." [Parent 339]
Distraction	"Too much reliance. Just another distraction in an already tough and distracting world." [Parent 1697]
	"Total distraction at home. Another thing for me to monitor/take away/be the bad guy about. My summer has been wonderful without them around." [Parent 574]
Internet Safety/Security Worries	"There was apparently no plan in place to control children's access to the internet [sic]. It was assumed that a "firewall" would block all inappropriate material, including images. Obviously this is a very elementary and incorrect understanding of a firewall. I do not agree with unrestricted access to the internet by 7-year-olds." [Parent 294]
Program Issues	"Poor safety, poor knowledge of how to use the device by teachers, my child did not learn new information from the iPad and the iPad was used as a babysitter in the classroom." [Parent 2119]
	"As stated previously, younger students need to learn the basics of an iPad and how to appropriately utilize them. There was a lack of organization when it came to iPad storage and blocks/chargers. Overall, the iPads were overused and misused." [Parent 1091]
Teacher Issues	"The staff were poorly trained, there was no planned direction or use, and no consistency for its use.It [sic] was seldom used for the first half of the school year, and rarely used in the second half (not even getting turned on for weeks at a time)." [Parent 1118]
	"The teacher spent her time on Facebook and my child was asked to read Epic for hours on end. Total waste of a school year." [Parent 339]
	"I was not one of the parents that fought the use of iPads as I thought the teachers would know how to incorporate them. However, the teacher that we had did no know how to teach the academic skill [sic] necessary therefore the iPad was misused." [Parent 2272]

Theme	Comment
Philosophically Opposed	"Not enough time spent on the basic grammar and math concepts to have a strong foundation for my children's education. I feel that I should not have to teach my children things they should be learning during the school year. That's why I send them to public school not home school my kids." [Parent 2173]
	"It seems like the 1:1 initiative was done to prove that we're such a great school system. There's no research (that the school could provide or I find) that even suggests that a student will learn better if they have their own ipad [sic]. Beyond all that, I think an ipad [sic] is a poor choice of device. It doesn't teach them to type or use the hand/eye coordination of a mouse. There is no child at risk of not learning how to use a touch screen. We want to teach kids to not be glued to their phones/other technology, but we're teaching them to do just that! It's unfortunate and one of my biggest problems with HSE." [Parent 1629]
	"I'm a firm believer in books, paper and pencil!" [Parent 1696]
Detrimental to Learning	"Her handwriting and spelling have drastically went [sic] downhill. She did not have spelling tests or words and was not able to practice writing at school." [Parent 339]
	"I did not see any improvement in study skills, homework/project grades or report cards. It did not benefit my household just an extra expense." [Parent 2186]
	"Dumb for kids to use iPads. We pay for books, use those! Also, my kids don't even know how to use an index or even what it is. That's lame." [Parent 418]
	"A lot of time was wasted learning the iPad, these skills are going to do little to help them prepare for calculus or writing papers. We moved during the school year, and my daughter was behind and I feel it was the wasted time on I-pads [sic] that put her there. She ended up getting S+in [sic] everything at her new school, but it took a lot of tears and work to get there. I shudder to think where her peers who do not have her natural abilities ended up." [Parent 1515]

Question 17: Support Needed

Survey Question 17 asked parents directly, "How can the school district better support you as a parent in regard to the iPad initiative? One hundred seven of these responses simply offered compliments on the program. At the same time, 248 parents expressed that the school district could best support them by discontinuing or scaling back the initiative. The remaining 578 open-text responses yielded a variety of very specific suggestions covering topics related to the device itself, device content (apps), communication, teacher training/support, costs, parent education, and the program. The iPad and its associated costs and program management concerns were cited most often by parents as areas in which they would appreciate support.

Ninety-two coded segments revolved around costs associated with the iPad. Parents ask for support by decreasing costs to them – either by providing devices free of charge, or by significantly decreasing other textbook fees. Several parents did note that before the iPad initiative began, the district had promised that the availability of digital devices for learning would result in textbook fees continuing to decline, and, from their vantage point, this has not occurred. "Provide them," remarked Parent 768. "I think it's crazy we are supposed to supply them. They are not needed to teach…this is a luxury. Parents should not have to absorb luxury costs...I think it's a huge burden to put on parents given we already have book fees and this is not NEEDED to teach them what they need to know."

The iPad program itself garnered ninety-nine distinct comments; these ranged from requests to improve the distribution process and/or collection processes of rental iPads, to pleas that the district to own and manage all iPads. "The passing out of the devices at the beginning of the year was horribly disorganized and very confusing," commented Parent 933, among others. Parent 552 added, "Need to have qualified individuals available to set up the ipads [sic] – not teachers that have no idea how to accomplish this task," and Parent 923 pleaded, "Take parents out of the app downloading – random emails throughout the year…makes it difficult to keep up with what should be on the iPad." Parent 2286 summed up the thoughts of many: "A well thought out MDM program would make everyone's lives easier."

Question 18

Parents were asked if they had any additional comments on the iPad initiative. Six hundred parents wrote a response. Over two hundred of these comments simply answered some version of "No", affirming that they had no further comments. Several parents wrote positive comments such as "Keep it up!" Most other comments in this category were repetitive – parents

restated the specific positive perceptions and/or concerns that they had expressed throughout the survey. Often one parent's positive remark would be immediately followed by another parent's negative remark. For example, Parent 496 said, "Please get rid of them", meaning the iPads, while Parent 497 said, "Please have next year." Parent 566's comment, "Very beneficial enhanced learning and skills", was immediately followed by "Very disappointed schools have gone this route" from Parent 567.

Table 13

Additional Parent Comments

"We don't like using iPad at all, these days everything goes to use more technology tools like iPad, iPhone, laptop. I prefer traditional tools, writing with pen, drawing on the paper. It's my re [sic] touchable. It feels you are in school." [Parent 1028]
"What was wrong with pen, paper, and using textbooks?" [Parent 1351]
"Get back to good teaching habits. Have lesson plans and have paper homework so as parents we can better follow along and supplement the day's lessons at home." [Parent 68]
"Nothing can really replace doing work with a pencil and paper. Just because it's new doesn't mean it's better. Teach children not to rely so much on technology. Sometimes they aren't going to have it. Teach children actual life skills." [Parent 2293]
"Read physical books. Teach math on chalkboard and in a way that makes sense." [Parent 1836]
"Should be used sparingly, as a tool, not as a "go-to", which apparently is the road we're heading down. K-2 is so important, it saddens me to see so much use of electronic devices when this is the time we want our teachers to mold our kid's learning skills. Teach them how to "learn", how to research and put their research into their own words. iPads don't do this, teachers do." [Parent 1321]
"I am concerned about attention and developing the successful "soft" skills of being a student while in K-2. I value my child being able to learn self-control, how to read, and write. The iPad has not been needed in that for centuries. Kids know how to use technology. Honestly, go out to eat. You see parents handing very small children devices. I guess I just want more focus on the academic development of the mind. I want hands on inquiry and learning to be active through movement and music." [Parent 1041]

Though the Question 18 comments were quite repetitive, several were insightful in what they exposed about parents' understanding and/or acceptance of the district's vision of iPads as digital learning tools. The response of Parent 2119 reveals understanding as to the pedagogical purpose of the iPad: "They were not used as *digital learning tools*. They were used as toys." Parent 2119 has clearly absorbed the message of iPad as learning tool; he or she just believes that

the iPads were not used in this way. Several other comments beg the question – has the cognitive learning tool paradigm been misunderstood, or has it been considered and rejected it in favor of traditional or 'familiar' classroom instruction. Several comments urging a return to familiar educational tools and practices are shared in Table 13.

Chapter 5. Discussion

Introduction

The purpose of this survey study was to assess the views of parents following the first year of a one-to-one iPad initiative in one Indiana district's elementary schools. All parents of the district's K-2 students were invited to participate in the One-to-One Parent iPad Survey, an instrument specifically designed to gather parent feedback on the iPad initiative. It has been hoped that knowledge generated from this investigation would aid this school district in improving the iPad program, and in developing family education and support strategies as the elementary iPad initiative continues.

The four research questions guiding this study were as follows:

1. What positive observations do parents have about their child's use of the iPad during the 2016-17 school year?
2. What concerns do parents express regarding their child's use of the iPad during the 2016-17 school year?
3. What do parents believe to be the advantages and disadvantages of taking the iPads home each day versus keeping the iPads at school overnight?
4. How do parents believe that the school district can provide further education and support to families with regard to this one-to-one initiative?

Chapter 4 presented the data gathered through the One-to-One Parent iPad Survey. The current chapter first discusses study findings through the lens of each research question, then considers the holistic implications of survey findings, particularly when measured against this district's purpose and goals for the iPad initiative. Finally, a series of recommendations is offered for the district under study.

Findings

Research Question 1: What positive observations do parents have about their child's use of the iPad during the 2016-17 school year?

Throughout the survey, a variety of positive observations were expressed. Direct positive observations from Question 13 (*Do you have any positive observations…*?) were outlined in Chapter 4. Positives which came to light indirectly, through parents' responses to other survey questions, reinforced the Question 13 positives. Parents see heightened student engagement, agency, and responsibility as positives of the iPad initiative. They note as positive the development of technology and research skills they have witnessed in their children, as well as the ability to research topics of interest on one's own device. Many parents believe that academic skill practice is a benefit of personal iPads; the two subjects mentioned repeatedly were reading and math. See Table 7 for sample parent comments from each of these categories.

The positive thread which emerged as strongest in the survey as a whole was *parents' appreciation of iPad-enabled communication and learning connections between school and home.* Communication/connection between home and school was noted as a parent's direct positive observation 287 times (Question 13). It was also noted as parents described the reason for their satisfaction ranking (Question 16), their concerns about home and classroom iPad use (Questions 11 and 14), their requests for support (Question 17) and their additional comments (Questions 12 and 18). Parent 500 offered this response, echoed similarly by many others: "I liked how they shared things on Seesaw and loved the videos they made for projects. It was nice having a glimpse into his school day." Parent 727 stated, "…it was a great way for us as parents to stay up to date on her classroom activities and performance," and Parent 256 added, "ease of communicating with teachers." Parent 1001 provided perhaps the

Table 14

Parent Comments Seeking Increased Home-School Connection

"NO COMMUNICATION FROM TEACHER" [Parent 2032]
"I do not know all of the things hat [sic] the kids use the iPad for. More sharing from teachers on day to day activities would be helpful since my student doesn't share so much." [Parent 159]
"I could say that the teacher did not involve the parents much on what was happening during the school year and on what they were doing with the iPads" [Parent 1372]
"I don't feel that it was completely communited [sic] to us how much our child was using the iPad at school and what they were using it for." [Parent 1340]
"Would like to have more transparency in what role technology serves in the classroom." [Parent 627]
"No clear understanding of when it was used, what it was used for, and poor school management of roll out." [Parent 923]
"The teacher never really encouraged use of the IPAD for learning purposes at home." [Parent 532]
"Teacher did not communicate any useful purpose of the device." [Parent 1355]
"I'm not sure how much it was actually used for academic purposes. Very little communication from the teacher and school about it." [Parent 325]
"On the flip-side of cutting down on papers sent home, I feel that I missed out on knowing what all she was working on, by it being online. That is the only downside that I really see." [Parent 1113]
"My child rarely used iPad in class, did not use seesaw [sic] and rarely brought iPad home even though we allowed her to." [Parent 272]
"We would have liked to have more access, awareness around what our child was doing. We knew about a few apps they used but feel like the opportunity to continue learning at home was missed somewhat." [Parent 224]
"It was wasteful because of the lack of communication with parents." [Parent 2169]
"classroom communication with parents has to increase with use of the iPad because everything is not coming home as a piece of paper. SeeSaw [sic] is great but it also requires a lot of filtering to find the essential messages. Please give parents a snapshot of the essential communications items at least once a week." [Parent 98]
"No homework or not communication app like See Saw [sic] were use" [Parent 281]
"Communicate better with the parents about what apps and sites are being used. We have strict parental controls set on our child's iPad and will continue to do so because we want to make sure that what they are doing on the iPad is purposeful and beneficial. We have been happy to add apps or sites that were needed but there seemed to be a lack of communication with parents." [Parent 620]
"I'm not sure how much work was being done on a daily basis for our son's classroom. Communication with teacher was lacking - not an issue of ipad [sic] initiative." [Parent 828]
"If the iPads are going to used [sic], I want to know what is the iPad was used for during the day. There should be more communication and transparency between the parents and teachers." [Parent 2173]

most enthusiastic comment supporting this thread: "LOVED Seesaw as a communication tool! ...Our son became an expert at documenting this learning with the camera. We would often go through his camera roll and ask questions and he would explain things he was doing/learning." Survey data suggest that parents in this school district highly value the windows they are given into their child's classroom as a result of one-to-one technology. Additional positive parent comments related to the home-school connection can be found in Table 7.

It is imperative to state that this positive theme, *parents' appreciation of home-school connections enabled by the iPad,* is also made evident inversely – by the numerous parents who admittedly desire this connection and did not receive it. Table 14 lists sample parent responses from across the survey highlighting the dearth of communication and connection to the classroom for some parents.

Research Question 2: What concerns do parents express regarding their child's use of the iPad during the 2016-17 school year?

A variety of parent concerns surfaced in the One-to-One Survey. Some concerns were logistics-related; others were more directly tied to teaching and learning. Some, such as communication concerns, stemmed from both the program *and* the classroom.

Parents relayed concerns based on actual experiences from the year, and they also expressed concerns that revealed worries, or "*What ifs…?*", rather than actual incidents. For example, Parent 1228 is concerned because, "The screen broke twice and I had to pay for it twice," while Parent 52 is "worried about it getting damaged while at home or in transport." Parent 2256 recounted an actual issue, "…we had some problems with another child sharing sensitive material with our 2nd grader that should have not been allowed. This student did not rent his ipad [sic] but, owned it and had material that should not have been viewed in the

classroom," while Parent 2200 expressed ongoing apprehension: "I'm always concerned they will see something they shouldn't...something that won't be caught through the school's filter...or something from another child's personal iPad they're bringing from home."

The cost of the iPad, whether rented or family owned, is an expressed hardship for some, especially for families with multiple children in the school system. As with Parent 52 above, some families worry that iPad breakage will result in extra costs outside of the family budget. For some, as with Parent 1228 (quoted above), breakage has already occurred. Some parents question why the district charges a rental fee at all; they point to nearby districts that own and manage one-to-one devices and check them out to students for the school year. Parent 2128 offered, "Use a system like most other districts by not putting a financial burdon [sic] on families to provide an Ipad [sic]." Parent 2145 wrote, "I also feel that if iPads are going to be required they should be supplied by the school. There are several districts that require iPads, however, the school provides them with a refundable deposit."

Data indicate that many parents would prefer the district to own all iPads so that the district, instead of the parents, would set up, control, and manage them. Many parents expressed frustration with some aspect of iPad management (set up, app installation, iTunes accounts, etc.), and would prefer that iPads be checked out to students for the school year – already loaded with a set of educational apps and 'locked down' with appropriate restrictions. Parent 1900 was one of many to express this sentiment: "I see a real problem with allowing people to send their personal iPads to school. They should all be rental so the content can be controlled/consistent."

Frustration levels with iPad management appear to have been influenced by the level of school-building support, a teacher's understanding of the iPad, and the parent's comfort with technology. Parent perceptions of school-building support and teacher readiness differed;

however, no building-level pattern was found to exist. That is to say, perceptions of teacher preparedness and building support varied, even among parents in the same school building. Table 15 offers several examples of this inner-school dichotomy, taken from three of the twelve school buildings.

Table 15

Comparisons Within Buildings

Building A *Distributed iPads at a "Tech Night". Staff were on site to help set up.*
Building Support
"The school rolled the iPads out after Labor Day, offered trainings and lots of information. The building tech was great and easy to work with." [Parent 141]
"I like the way that the school rolled the iPad out by having the parents come to the school to download the apps in a group setting. I appreciate that there were many members of the staff on hand to assist and answer questions." [Parent 1802]
"The beginning of school meeting was very helpful." [Parent 625]
"We do not own iPads. I had no idea how to one let alone set one up for my kids to use for school. We did have a tech night at school where teachers were there to "help" but with so many parents and not really knowing what to do I left very upset and frustrated." [Parent 2270]
"[Need an]…Improved technology session for parents. The in-person session in the fall was a challenge. Difficult to hear the presenters; not enough outlets; the iPad was not charged to add apps; overall there were a lot of frustrated parents in the cafeteria and many of them had children go through the process prior to that session." [Parent 236]
"Set up event in the fall was atrocious. Speakers weren't interesting and made it sound like [initiative name] meant using an iPad and that was it. A meeting in an auditorium at the high school or a comfortable setting with a formal presentation then individual set up teams in different rooms would REALLY help. (Re: setting up on [sic] Existing [sic] iCloud account, new account, advanced parents, clueless folks)" [Parent 1012]
Teacher Preparedness
"Poor safety, poor knowledge of how to use the device by teachers, my child did not learn new information from the iPad and the iPad was used as a babysitter in the classroom." [Parent 2119]
"Train the teachers and parents at a Q&A session to teach the usage of apps and provide lists of educational apps. We loaded several apps the day we got the iPads, but not many of them were ever used. We never got trained on their functionality and were not encouraged to explore them." [Parent 758]
"My daughter's teacher did a great job of mixing iPad use into the curriculum." [Parent 34]
"You all did a great job communicating the "production over consumption" goal for the iPads. My daughter's teacher incorporated the iPads well into the curriculum so that technology enhanced learning." [Parent 141]
"Teachers all need to be on the same page about Ipads [sic]. Seems to be incredibly inconsistent." [Parent 229]

Building B *Strong Building Principal, Many Teacher Leaders*
Teacher Preparedness
The teacher spent her time on Facebook and my child was asked to read Epic for hours on end. Total waste of a school year. [Parent 339]
I was very pleased with how the iPad was used very intentionally in the classroom. [Parent 429]
The teacher didn't know how to properly introduce these and use them for production in the classroom as an aid. She used them to replace teaching. [Parent 1966]
Train your teachers on how to integrate iPads into teaching. From what I heard there was very little training for teachers on how to use them in the classroom. [Parent 1966]
Building C *Parent opposition to the rollout originated here.*
Teacher Preparedness
The staff were poorly trained, there was no planned direction or use, and no consistency for its use. It was seldom used for the first half of the school year, and rarely used in the second half (not even getting turned on for weeks at a time). [Parent 1118]
I think my daughter's particular teacher did a nice job of incorporating the IPad [sic] but did not over use at the same time. [Parent 234]
Teacher did a great job of providing a blended curriculum. [Parent 1606]

Overall, setting up the iPad, creating and maintaining a personal iTunes/iCloud account with appropriate settings, as well as downloading and updating needed (and then sometimes unused) apps, was a cumbersome, unclear process some parents, even in Building A which held a required Tech Night (for renting families). Across the district, parents strongly expressed that they would prefer the district own and manage the iPads. If they *must* manage the iPads, though, parents ask that they be given specific written instructions for a step-by-step, once-and-done process for set up and app installation.

The survey revealed that although parents are aware that district Internet services are filtered, they are still concerned for the safety and security of their child online. Several parents related specific incidents during the year in which their child accessed or was shown material that was terrifying or pornographic in nature. Because the iPads are not 'locked-down' by the district, i.e., families may add content, each case would require investigation to determine if

material was accessed despite school filters or was downloaded at home and accessed at school. Parents relayed ongoing concern about both. “I’m concerned other kids didn’t have appropriate filters on their iPads,” commented Parent 2187. Parent 2200 added, “I’m always concerned they will see something they shouldn’t…something that won’t be caught through the school’s filter…or something from another child’s personal iPad they’re bringing home.” Data suggest that safety and security concerns will be an ongoing issue if devices continue to be managed by individual families.

As some parents pointed to frequent communication as a positive of the iPad initiative, so did others point to a lack of communication as a concern of the program. For some parents, the communication they lack is logistical and program-related; these parents ask for clearer and more timely messaging about all things related to apps and iPad management, and they want confirmation that the apps installed and paid for through book fees are actually being used. Parent 1754 said that “more detailed information about apps and how the [sic] work and are used will be extremely helpful.” Parent 1900 asked that the district “standardize and communicate the apps/programs to be used.” Parent 1377 asked for “more clear expectations on what apps need to be downloaded and when. Also, ideas for other educational apps that the students can use at home…Directions on how to block unwanted access/content when students are at home but still allow them to access what they need at school.

Other parents seek a better understanding of how the iPad is being used in the classroom. Those parents who receive daily updates from their child’s teacher (especially through a ‘sharing’ app) expressed great pleasure in this. They report that they like knowing what has transpired in school, and that they especially love seeing their student’s work. Not all parents receive this kind of information, however. Some parents reported having no idea if and how the

iPad was ever used in class. Depending on the parent, the desire expressed was for evidence of use, evidence of no overuse (too much screen time), evidence of 'proper' use, and/or evidence of learning. The survey revealed the almost universal desire of parents in this district for more and daily feedback from the classroom.

Parents are concerned that the integration of the iPad is teacher dependent; the differing perceptions of classroom use in Table 12 provide evidence to support this belief. Parents with more than one child in the survey population directly observed teacher differences and reported so. Parent 903 volunteered, "Having 2 children in first grade with different teachers gave me a unique perspective. One teacher limited use of the iPad during class to instructional time and rarely allowed free time with the iPads. The other teacher frequently allowed the kids to use the iPads for free time and for extended periods of the day. That concerns me."

It is clear to parents that classroom teachers have differing comfort levels with the iPad device, and that teachers differ in their desire and/or preparedness to integrate the iPad as a learning tool. This comment came from Parent 1180: "The teacher had no idea how to work the iPads or what to do with them. The students knew how to work them better than she did. It was disappointing to see them under used [sic] and to not get the full benefit from the tech in the classroom." Parent 1607 clearly has some understanding of how other classrooms used the iPads as learning tools, but her child was left out: "I have many concerns. The math programs are not enhancing, rather replacing worksheets. My child's class did not use SeeSaw [sic]. My child was never taught how to create anything using his iPad. He was given time on MobyMax to do math problems and fluency. He did no Genius hour, no research. I was disappointed he did not use Shadow Puppet, ThingLink, etc. to make a project." Parents express their desire for consistent teacher knowledge, buy-in, and balanced use in every classroom.

Research Question 3: What do parents believe to be the advantages and disadvantages of taking the iPads home each day versus keeping the iPads at school overnight?

Parents who allowed the iPad to travel to and from home noted advantages that were similar to the overall positive observations of classroom use. Some parents valued the engagement in learning they witnessed in their child; others valued the ability to see what their child had used or created on the iPad during the school day. Some parents appreciated their child's growth in responsibility and independence, in that he or she had learned to keep an iPad charged and carry it safely to and from school. Parents noted the opportunity their child had to learn more about technology and to practice research skills by having the iPad at home, and still others mentioned the growth of soft skills such as communication and collaboration.

Based on the frequency of coded comments, however, the data imply that access to learning resources and the opportunity to practice academic skills are the advantages currently most valued by parent respondents. The majority of these comments were general in nature: "We used it to strengthen her reading skills," (Parent 835), and, "Math was easier to practice at home with the app for my 2nd grader," (Parent 2196). The district subscription resources Epic, RazKids, XtraMath, and Night Zookeeper were mentioned by name in at least one instance, as were several free apps, YouTube Kids for example. Parents noted appreciation for the access their child had to many electronic books. Parent 1395 commented, "She really enjoyed the reading/books app. The app would read books to her, and she could read books herself and take quizzes at the end. She read a lot of books through her iPad on a variety of subjects. It was nice to have so much content for her reading level at her fingertips."

Despite the distinct advantages of iPad accessibility at home perceived by parents, they were not immune to its challenges. Perceived home disadvantages mirrored classroom challenges to a large extent; parents worry about iPad breakage at school and at home, and they are concerned that their child may be inadvertently exposed to inappropriate content. In the area of communication, already shown to be a concern of the program overall, a number of parents felt that *Lack of Direction from School* hurt their ability to help their child use the iPad for educational purposes at home. Curiously, parent expressions around what they felt to be lack of direction for iPad use at home added evidence to the fact that parents' conceptions of 'educational purposes' of iPads differ somewhat – this becomes significant when the district considers how well their goals for the iPad initiative have been understood by families. Parent 2257 is clearly looking for skill building apps: "As a parent, I would like to know more about games and activities that can build their reading and math skills." Parent 688 sees the iPad as as a device on which to complete homework: "I hope school can give me more details about how they use the iPad at school, how we can help use ipad [sic] at home finish homework [sic]," as does Parent 707, who remarked, "He wasn't assigned anything to do at home that would help him learn." Though we do not know how Parent 766 defines "learning tool", he/she does express a knowledge of the term. "I hope they can see [the iPad] as a learning tool rather than just another technology to play with."

Regardless of the type of direction parents seek, it is clear that many believe there has been a lack of direction for home iPad use in the initiative's first year. "We were at the mercy of the information that a 5/6 year old was willing to give us as to what the iPad could do," commented Parent 301. It is likely that any suggestions for iPad home use that were offered were almost completely teacher dependent. "There was very little in the way of any productive use

that the school system provided," said Parent 1118. Parent 2032 summed up this view: "Beneficial only with communication from teacher… If your teachers choose not to communicate, then it's pointless and a waste of money." As this particular disadvantage could be easily remedied with consistent messaging and communication, this issue speaks to the need for the district to revisit its communication strategies regarding the initiative.

When asked to comment on disadvantages of having the iPad at home, parents cited the areas of physical and mental health to a much greater extent than these areas had been mentioned as a classroom concern. Parents also noted strongly that iPad access at home led their child to become obsessed with the device (some parents used the words "addicted to"); this in turn led to perceived behavior changes in their child, and family conflict in the home.

Physical concerns expressed by parents about home iPad use frequently mentioned eyesight. "…my wife…has concerns about harm to eyesight," said Parent 1981. Parent 257 echoed this fear: "I have to constantly remind her to keep the iPad at a safe distance from her eyes." Parent 1791 expressed this fear as a simple question. "Is it harming his vision?" Parent 1925 wondered about vision as well: "[I have concern about] how it is going to affect his long-term vision." Another concern noted by parents in the realm of physical health was possible brain effects. "Use of electronic devices for extended periods of time is proven from research to be hatmful [sic] to developing brains," said Parent 1790.

The theme of device obsession and associated behavioral concerns, and the family stress resulting from parent-child conflict, were mentioned by fifty-six different parents. Comments ranged from the straightforward, "He is addicted to it. It is a constant fight to get him off of it," (Parent 1714), to more thorough explanations of this issue. "The iPad completely changes his temperament. My normally easy-going kid becomes moody, aggravated, and whiny because he

becomes obsessed with the iPad. It is incredible to see the change in his demeanor. He would not even have an iPad were it not for him having to have one at school," (Parent 960).

Through their comments, some parents appear aware of their child's tendencies and able to cope. "We do find that when on screens unmonitored, even for short period [sic] of time, kids behave very differently towards each other and us. This summer we are taking a big break from screen time to promote better interpersonal communication," (Parent 2116). Others appear somewhat overwhelmed and are unhappy to have another thing to monitor. "It's exhausting policing it," offered Parent 1270. Parent 1512 commented, "he is always on the ipad [sic] and its [sic] become an addiction honestly…. I do take it away but its [sic] become a constant obsession of his and I'm [sic] really concerned that he doesn't want to play outside anymore or anything else other then [sic] ipad [sic]." Parent 354 provides a summary of parent concerns regarding physical and mental health: "We try to limit the use of electronic devices at home, but it is virtually impossible to manage this when iPads are to be brought home for use for schoolwork. We have strong concerns regarding both the encouragement of digital vs. human interaction with the increased use of these devices and with regard to vision/headache issues with repeated and long-term use."

Research Question 4: How do parents believe that the school district can provide further education and support to families with regard to this one-to-one initiative?

Parents offered many recommendations for needed support and/or education regarding the one-to-one program. Parents were asked to state their suggestions directly in Survey Question 17; these were reported in Chapter 4. Similar requests for education and support were restated across the Survey as well.

Throughout the Survey, it became clear that one segment of parents requested no other support but an end to the program, or at least a scaling back. Parents who requested a scaling back of the initiative most commonly asked that the district wait until grade five (intermediate school) to begin one-to-one. "iPads should be given when they're at least in 5th grade" (Parent 1274) was a comment echoed often. Across the entire survey, even among parents who reported satisfaction with the initiative's first year, there are those who still feel that the school experience for K-2 students would be better without one-to-one technology. Parent 1524 exemplifies this view:

> I thought my child's teacher had a good perspective on how much ipad [sic] use in the classroom was appropriate. I am happy that the teacher my child had did limit ipad [sic] use because I feel a child should be taught other ways to learn things rather than in front of a screen. Overall, I would like to see ipad's [sic] go away in the elementary classrooms. I can respect the ipad [sic] initiative and comply, but I also feel that just because the initiative was started and time and money invested that things can still be evaluated and possibly go back to a time where learning isn't done digitally. Our children are only this young once, and I want them to expand their minds in so many other ways rather than finding the information at a click of a button or two on a screen that has no personal interaction.

As was reported in Chapter 4, parents also want to be supported by being relieved of tasks associated with the iPad proper. The words 'cumbersome' and 'confusing' were mentioned when parents noted their experiences in setting up and maintaining the device. Some parents reported little to no instructions or communication regarding apps needed and login procedures.

In addition, some parents felt helpless to understand how to set adequate restrictions on their child's iPad without blocking school required apps or sites.

Parents also expressed that they would feel supported if the district locked down the iPads and only loaded educational apps on the devices. Parents believe this support would be two-fold. It would relieve them of the frustrations associated with iPad management, and would alleviate parent-child friction at home. Parent 500 said, "The majority of my son's use of the iPad at home was playing games and watching videos. He was addicted to it and it became a fight every day to get him off of it. I mostly regretted my decision to let him bring it home because it created so much stress in our house." Parent 2216 expressed this frustration: "…these iPads are the worst things to have entered our family. We have had to become tech experts and [are] constantly battling our children over time spent."

In the realm of parent education, parents ask that if they must manage the iPads, they be given step-by-step guidance for iPad setup, function, and management, as well as for recommended iTunes/iCloud account settings. Others ask for step-by-step instructions on how to make the iPad safe from inappropriate content at school and at home, including home Wi-Fi considerations. Parents also request information as to the best educational apps to use at home for skill building and personalized education. The Survey did not ask parents how they preferred to receive training. Several parents suggested that training be accessible on school websites; several others suggested school-based workshops. A pertinent question for the district to investigate at this time would be how best to present parent training opportunities so that they will address the needs of parents.

Implications

The One-to-One Parent Survey has produced a rich data set through which the perceptions of the district's K-2 parents on the iPad initiative may be understood. The themes revealed through data analysis have implications for the school district concerning the one-to-one program as well as for the district as a school "system", especially if the district seeks to strengthen school-family partnerships and build a cohesive community vision around teaching and learning.

Parent Beliefs about Technology.

Data has revealed that many parents appreciate the program and believe it has been a beneficial addition to their child's educational experience overall. A lesser but significant number of parents believe that the program is uninformed and/or unwise. Indeed, the most striking feature of One-to-One Survey data is the wide range of parent thoughts and opinions that it reveals – parent perceptions differ widely concerning the iPad program itself and their child's use of the iPad at school.

Data reveal a clear disparity among parents in what they *want* or *expect* out of a technology program. This district adopted one-to-one technology with iPads so that each student might have access to a personal cognitive learning tool. Survey data suggest that not all parents grasp (or agree with) this district philosophy, and thus look for different indicators of 'success' than those the district might offer. For example, a parent who believes that the iPad is a tool for *Skill Development* (see Table 11) might mistakenly look to the memorization of math facts as a measure of success.

Even among those parents who may have a mental model of technology as cognitive tool, differing beliefs exist about the place of these tools in school, especially for young children

(parent definitions of 'young' differ as well). Parent beliefs around the appropriateness of learning technologies (even as cognitive tools) were often very firm – sometimes vehement – in both directions. For example, Parent 526 reported, "Technology is essentially the leading factor in driving our economy and education. It's important to get these devices in our children's hands as early as possible to allow optimal growth and familiarity," while Parent 1321 said, "K-2 is so important, it saddens me to see so much use of electronic devices when this is the time we want our teachers to mold our kid's learning skills."

Parent Beliefs About the Nature of School.

Beyond technology, data make clear that parents' beliefs about child development and their mental models of 'school' differ vastly - and it is these thoughts and beliefs that shape their expectations of the district's classrooms for their children. Table 16 offers a sampling of the divergence of parent beliefs and opinions regarding purposes and practices in schools and classrooms.

Table 16

Parent Beliefs Regarding School and Classrooms

Tradition-Focused	Future-Focused
"I feel my child is missing out on basic textbook research skills, as well as basic handwriting skills which will be necessary later in life. Our school system seems to be going away from foundations of education and relying too much on electronic devices. I want my kids to be able to converse, ask questions, and not immediately turn to a device for answers." [Parent 1321]	"Keep doing these types of discovery so teachers can learn about student passions and then teach how technology can be utilized to enhance them." [Parent 1734]
"Read physical books. Teach math on chalkboard and in a way that makes sense." [Parent 1836]	"Way to be progressive in our students' learning" [Parent 541]
"I am concerned about attention and developing the successful "soft" skills of being a student while in K-2. I value my child being able to learn self-control, how to read, and write. The iPad has not been needed in that for centuries." [Parent 1041]	"Continue to thrive to be at the forefront of utilizing new and maybe even experimental academic methods of integrating iPad use into the curriculum." [Parent 627]
"Do not allow them in school. Teach these kids to read and write. Go back to the 4 star school you used to be." [Parent 2272]	"Keep it up ... by the time these kids are in the workforce, technology understanding and savvy will be a must have!" [Parent 1510]

Tradition-Focused	Future-Focused
"Again, I don't know what it did for my son. I want him to learn to read and write w/o a computer. I want him to be able to spell and learn cursive. I don't think an iPad can help in those areas." [Parent 707]	"They are a great tool for the kids and it only makes sense to continue in this direction and to embrace the tech that these kids will use." [Parent 2286]
"K-2 is so important, it saddens me to see so much use of electronic devices when this is the time we want our teachers to mold our kid's learning skills. Teach them how to "learn", how to research and put their research into their own words. iPads don't do this, teachers do." [Parent 1321]	"Thanks for continuing to work on improving the way we leverage technology in the classrooms." [Parent 2116]
"I do feel like that sometimes it was easier for the teacher to assign homework on the iPad rather than sending home paper homework. As a parent I do prefer worksheets, etc." [Parent 1051]	"Keep up the great work! Technology is their future!!" [Parent 1143]

Building Community Vision.

The district under study is fortunate to have involved, caring parents, as evidenced by 1) the strong response rate to the Survey given its short, summer availability window; and, 2) the thousands of narrative comments shared. It behooves this district to enfold its parent community into system processes as integral stakeholders, by giving families voice during strategic planning, and through a more methodical, transparent sharing of the district's beliefs about children, learning science, and classroom practices on a consistent basis.

Parents in this community indicate that they would appreciate a clear teaching and learning vision, set of goals, strategic plan, and framework of implementation to be transparently available. Currently, no such holistic plan is visible. Many parents tap into the social media channels of district-level communication that exist (Facebook, Twitter, and Instagram, for example) but savvy parents see these as merely one-way marketing tools (success stories), not as evidence of a true partnership between home and school. With greater transparency and opportunities for parents to learn and contribute, this growing community will be in a better position to proceed in one united direction for the benefit of all students.

Teacher Needs.

As survey data documented differing parent perceptions about the purpose and appropriateness of learning technologies, data also hinted at a lack of clarity of purpose and/or consistency of use among teachers. Comments such as those found in Table 12 point to either a lack of understanding among some teachers of methods to incorporate the iPad as a learning tool, or at least a lack of clarity as to how to articulate this to parents (or of the necessity of doing so). If the rationale of digital learning tools is to be understood by families, it must be also be understood, embraced, and articulated by those within the district system. It was not within the scope of this study to measure administrators' or teachers' beliefs about or competencies around digital learning tools; likewise, this study did not measure faculty understanding or support of the district's goals. It is highly recommended that the district investigate these, however. Families cannot be expected to rally around the iPad initiative if they do not understand its purpose and goals, and they will not grasp this pedagogical rationale if the district is not first united as to the foundational purpose(s) of iPads for learning.

Recommendations

Two categories of recommendation are presented below. *Program Recommendations* offers one central suggestion in each of four key areas of parent concern: Program Management, Teacher Readiness and Classroom Use, Home-School Communication, and Parent Education and Support. It is highly suggested that these four central recommendations be implemented on or before the start of the school year 2018-2019.

Following the four central Program Recommendations are three *Foundational Recommendations*, over-arching system considerations that, if adopted, will add an additional layer of transparency and community connection between this district and its families. By

implementing the *Foundational Recommendations,* the district will place itself in a forward thinking (as opposed to reactionary), vision-driven position.

Program Recommendations.

Program Management.

It is recommended that this district follow the pattern of most school districts in Indiana and reconfigure its one-to-one model so that all iPads are owned, configured, and managed by the district and provided, with rental fee if necessary, each year for student use.

Though a nationwide, comprehensive database of K-2 one-to-one device funding by district could not be found, Indiana state data indicate that the vast majority of devices for K-12 one-to-one programs in schools and districts are owned by the district and 'checked out' or 'rented' to students for the school year. An examination of raw data from 2017 Indiana District Technology Plans indicates that in a majority of districts, devices are purchased or leased at the district level – common funding streams are Capital Projects funds, eRate Reimbursement, and Title 1, Part A funds, with grants and textbook rental fees providing supplemental funding. An exception to this model is those districts that have implemented one-to-one in a Bring Your Own Device format, but Indiana data indicates that these programs are not common in the state (Bailey, 2017).

As has been detailed in this study, district parents hold a variety of apprehensions and frustrations about the iPad program in the areas of Internet safety and security, apps and accounts, costs, and distribution/collection of the devices. In order to most comprehensively address these parent concerns, it is recommended that the district under study follow the pattern of most school districts in this state and reconfigure its one-to-one model so that all iPads are owned, configured, and managed by the district, and distributed each year for student use.

If all iPads were owned and configured by the district, parents would no longer bear the burden of managing an iTunes/iCloud account for their child and would not be responsible to download/update apps throughout the year at the behest of individual teachers. On district owned iPads, restrictions could be configured consistently for all, in such as way as to keep students safe yet still allow district supported programs and testing software to run unhindered. In this model, iPads could be distributed ready to go for the year; hassles expressed by parents with regard to preparing the iPad and/or waiting for teachers to provide instructions would cease. No longer would there be classroom tension between teachers and students over apps needed but not yet downloaded by parents. The decision to manage all iPads would effectively eliminate several key causes of dissatisfaction expressed by parent respondents in the One-to-One Survey.

Though most parent concerns regarding program logistics would be eliminated with a district-managed device model, survey data suggest that there is one concern that may linger. Evidenced by the fact that parent survey respondents harbor worries over their child's Internet safety even when their child is using a family-owned device in their home, data imply that Internet safety and security fears will persist. That being said, if district device management prohibits open downloading on school devices, fears over what another student may download at home and share with one's child at school would no longer be an issue. This fact in itself will protect against some issues of the past year and will allay some expressed fears.

Teacher Readiness & Classroom Use.

It is recommended that the district build in required, ongoing professional development for faculty around the district vision for student learning, including the use of digital devices as cognitive learning tools.

Research attests to the profound importance of ongoing professional learning for all educators (Borko, 2004). In the context of technology-enabled learning in K-12 schools, research bears out the critical need to equip teachers with the new skills and competencies they will need to instruct meaningfully in technology-rich environments (Ertmer & Ottenbreit-Leftwich, 2013). This equipping cannot be once-and-done; continued technological innovations compel leaders to continuously provide staff with timely professional learning in these areas. The National Education Technology Plan, written as a guide for schools and districts in the transition to digital learning, reinforces the importance of continued teacher readiness and job-embedded professional learning, all tailored to an institution's vision for student learning (NETP, 2017).

Survey results suggested substantial differences in how the iPad was employed by various teachers in the initiative's first year. Parents perceive that teachers differ in their basic understanding of iPad functions and use, their pedagogical readiness to implement the technology as a learning tool, and their actual integration of the device. Parents with more than one student in the survey population noted these differences first hand. In addition, some parents felt that the purpose of the iPad for learning was not clearly articulated by teachers to families. Perhaps teachers' inconsistent and differing classroom practices with the iPad added to an unclear purpose in parents' minds. To help teachers to grasp both the concept of iPad as cognitive tool, and to equip them with strategies to fulfill this purpose in their classrooms, it is recommended that the district build in required, ongoing professional development for faculty around the district vision for student learning, including the use of digital devices as cognitive learning tools.

Home-School Communication.

It is recommended that the district determine one communication portal to be used for all district classrooms in grades K-2, create teacher expectations for regular home-school communication through this portal, and support teachers by providing timely digital learning information to share with parents.

Parent pleas for improved communication around the iPads and their uses for learning were pervasive across the Survey. Parents want to know how and to what extent the iPads are used in class; they want this communication to be ongoing and frequent. For the approximately 70% of students who take their iPad home each day, parents desire regular teacher communication about how to use the iPad at home to extend school-based learning, and of ways to provide extended learning opportunities for their child. A generation of research demonstrates the high value of parent-teacher communication for student outcomes, thus supporting these parent requests (Epstein, 1985, 2013; Kraft & Rogers, 2015).

It is recommended that the district determine one communication portal to be used for all district classrooms in grades K-2, create teacher expectations for regular home-school communication through this portal, and support teachers by providing timely digital learning information to share with parents. For the coming year, the district should consider providing a template for the portal (for example, a Grade 1 Canvas Home Page template) with spaces for a weekly newsletter/update, class photos, the sharing of project work, as well as a heading entitled "How We Used Technology This Week" which the teacher can update regularly. It will be critical not only to provide this portal for teachers 'ready to go', but also to require training for all elementary administrators and K-2 teachers on communication expectations and logistics of the chosen portal. Ongoing support must be offered as well.

Parent Education & Support.

It is recommended that the district build a parent education and support network around digital learning and the learning process in general. Begin the strategic development and implementation of parent education and support venues at the classroom, school, and district levels. Evaluate effectiveness by repeating a parent survey in the late spring of 2019.

Parent requests for education and support in the area of digital learning were pervasive throughout the Survey. From requests for a research base supporting digital learning, to iPad use and cybersecurity queries, to requests for online resource recommendations and face-to-face workshops, data suggest that the iPad initiative would be strengthened by a comprehensive parent support structure standing side-by-side with the student program.

Decades of sociological and educational research supports this recommendation (Epstein, 1985, 2013; Patrikakou, 2016), as do national frameworks for best practice in the implementation of digital learning initiatives. Academic inquiry has consistently confirmed the benefits of schools and families working in partnership for the benefit of students; parental involvement in the learning process has a positive impact on student achievement (Epstein, 2011, 2013; Jeynes, 2011; Patrikakou, 2016). By coming alongside families, schools promote student success. "The way schools care about children is reflected in the way schools care about the children's families," reports Epstein, whose research career examining home-school connections spans three decades (1995, p. 701). Caring about students' families can take many forms – including information access, parent education and ongoing communication. In this district, caring about students' families involves coming alongside parents with information on topics related to the one-to-one initiative, iPads, and learning in the digital age. Patrikakou explains educators' imperative in this regard:

> Schools are also in a position to play a crucial role in these times of change. They can assist parents in navigating the use of technology and media with their children and, quite importantly, enhancing the use of technology and media to strengthen the learning continuum between school and home. (2016, p. 21)

Not only does academic research affirm the benefits of parent education, national guiding frameworks for technology implementation stress the importance of bringing parents on board as well. Both the National Education Technology Plan (2016, 2017) and the International Society for Technology in Education's Essential Conditions (2018) emphasize the building of strong school-family partnerships in the planning and implementation of digital learning initiatives. In order for change to be successful, it is imperative that parents be included in the development of a shared vision, and that they be engaged as valued partners throughout the change process.

The researcher's history with the district allows her to acknowledge the district's good intentions with regard to building school-family partnerships. However, survey data indicate that regarding digital learning and the elementary iPad initiative, parents do not have the background or resources they need to support the district's vision and/or come alongside their child as an educational partner. Therefore, it is recommended that parent education and support become a key focus area for the district. This will involve building a holistic parent education and support network around digital learning. It is recommended that this process begin with a deeper needs analysis in this area, followed by the strategic development and implementation of parent education and support venues at the classroom, school, and district levels. It is also recommended that the effectiveness of this strategy be evaluated by repeating a parent survey in the late spring of 2019.

Foundational Recommendations.

The following recommendations arise from literature on systems theory and systemic change in education; that is, looking at problems and solutions not as individual issues to be confronted, but from the perspective of the entire interconnected system (Reigeluth, Watson & Watson, 2008). Though multiple frameworks for systemic educational change have been presented in the literature, common to all recent designs is their emphasis on an "authentic participatory" process – in which stakeholders are not objects in the change process but rather participants in it (Savoy & Carr-Chellman, 2014). These three foundational recommendations will foster stakeholder voice while promoting a transparent interconnected system.

1. Reconvene the District Technology Steering Committee (disbanded four years ago) – composed of stakeholders across the learning community – meeting quarterly to review progress toward district Educational Technology Plan goals, become informed of future learning innovations (for example, by considering the yearly K-12 Horizon Report), and assess learning community needs.
2. Produce a district Educational Technology white paper outlining belief statements & vision for technology in education in this district -- aligned with and referencing the National Education Technology Plan (NETP 2017), the International Society of Technology in Education Standards for Students and Indiana Academic Standards.
3. Produce a 5-year district Educational Technology Plan with short- and long-term goals and action steps which reference International Society of Technology in Education Standards for Students, Standards for Educators, and Standards for Administrators, and is aligned with the NETP-2017. Review this plan yearly via the District Technology Steering Committee.

Limitations

The primary limitation of this study is its specificity. Though the number of one-to-one initiatives continues to increase in school districts across Indiana, each is unique (Bailey, 2017). Districts plan technology integration from within, based on their own community and priorities. The current study was conceived to gather information for one school district, based on its specifically-designed elementary iPad initiative. The instrument used for data collection was designed to 'get at' particular elements of this district's program. It is unlikely that all survey questions of this study would be transferrable as is to other school communities.

A second limitation of this study is its electronic-only nature. Out of necessity, this study was conducted during summer break. Since school buildings were closed, there was no clear venue through which to display printed survey copies. Though at least one email address was on file for each of the over four thousand students represented in this population, families who did not check this email address during the two-week survey period would have missed the opportunity to participate. Particularly for families with language barriers, summer, electronic-only deployment resulted in a lack of opportunity to publicize and offer translation services for the survey.

Suggestions for Future Research

Research on one-to-one initiatives in K-12 settings is approaching the two-decade mark (Penuel, 2006). Laptop and tablet programs have garnered much research interest from the vantage points of teachers and students (Fleisher, 2012). Studies investigating the impact of one-to-one on families, however, is just beginning. Several studies have examined ways in which one-to-one might foster home and school communication (Olmstead, 2013). This study took a broader approach, wondering how the iPad influenced a variety of aspects of the home-school

partnership in one particular school corporation. More research is needed to understand how take-home digital learning tools influence home-school partnership, student learning beyond the school day, and co-learning between students and families.

Conclusions

In planning and carrying out technology integration, the district under study did many things well. The formation of a multi-stakeholder District Technology Committee in 2011 ensured that voices across the learning community would be heard during strategic planning. A Design Team of teacher leaders piloted one-to-one iPads with students for a full year, and a thorough evaluation was conducted. All teachers were provided with iPads and related professional development one full year prior to any student rollout. The district's infrastructure was solidified, and finances were set aside for its continued upkeep. Indeed, one only needs to review the recommendations of the National Education Technology Plan (NETP, 2016) to see that this district's one-to-one planning phase was purposeful and exemplary.

Challenge did arise. The gap in district leadership (described in Chapter 3) and resulting end to resource allocation and professional development hurt the change process. Nevertheless, the district studied here has made significant strides in meaningful technology integration.

As was outlined in Chapter 1, local education agencies plan and carry out technology implementations to match their goals and objectives (Penuel, 2006). The district under study is in the midst of a constructivist teaching and learning initiative, with the mission to "equip students with the content knowledge, unique skills, and new literacies they will need to contribute positively in their communities and to succeed in the 21st-century global economy." Integrated with other components of this teaching and learning initiative, primarily a shift in pedagogical practices, the district believes that, in a one-to-one model, iPads will become powerful tools for

learning, aka *cognitive mindtools*, and, as such, will propel individualized and meaningful student growth (Jonassen, D., Carr, C., & Yeah, H., 1998).

It is beyond the scope of this study to assess the degree to which the first year of the K-2 one-to-one program has propelled constructivist learning. However, this study has produced a rich set of data through which the district can evaluate how their vision for technology is understood by and reinforced in K-2 families, as well as how particular elements of the iPad program aid and/or hinder the accomplishment of the district's vision for teaching and learning.

Whether in favor of or against the one-to-one initiative, the One-to-One iPad Survey reinforces the extent to which parents in this particular district want to be involved in decisions concerning their child's education. Some request more say-so in classroom practices, but many simply ask for more in-depth and frequent communication.

> I appreciate how the iPads make it easier for teachers and how they serve as future-focused learning tools. I'm sure that there are thoughtful people reading this survey who are trying their best to make sure that the iPads are appropriately and effectively employed at every grade level. Just please include us as parents in that process because right now, I feel like I'm on the outside looking in with no real voice in that. Thanks. [Parent 1129]

Many immediate parent concerns about iPads can be addressed and remedied through enacting the *Program Recommendations* presented in this report. Enacting the *Foundational Recommendations* presented here will help to build a united vision for and understanding of educational technology in this learning community moving forward.

For the district's comprehensive teaching and learning initiative to be attained, however, especially considering the significant changes in the district's senior administration since the

initiative began, it behooves this district to consider a strategic review of the initiative's vision and framework, conducted by a task force of stakeholders across the learning community. Combined with data-driven improvements to the one-to-one program itself, a review and revitalization of the teaching and learning initiative will help ensure that the one-to-one iPad initiative will be successful in supporting this district's vision for constructivist 21st century teaching and learning in all classrooms.

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Appendix

Elementary Parent iPad Survey - Grades K-2

Intro

Dear Parents/Guardians,

My name is Susan Drumm. I am an instructional technology coach for HSE Schools and a doctoral candidate at Indiana University. As you know, 2016-2017 was first year of the 1:1 iPad program in Hamilton Southeastern' elementary schools. We would like your feedback on iPad use based on your experiences.

By completing this survey, we hope to collect information on how to help HSE Schools provide further communication and support to families regarding the elementary iPad initiative.

There are no foreseeable risks to you associated with completion of this study. The data collected from this study is confidential. The questionnaire is anonymous. The results of the study may be published but your name will not be known.

If you have any questions concerning the research study, please email me at sdrumm@indiana.edu. In addition, if you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have not been honored during the course of this project, you may contact the office for the Indiana University Bloomington Human Subjects Committee, Carmichael Center L03, 530 E. Kirkwood Ave., Bloomington, IN 47408, 812/855-3067, or by e-mail at iub_hsc@indiana.edu.

Your participation in this study is voluntary; you may refuse to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

Completion of this survey will be considered your consent to participate.

Thank you.

Susan Drumm
Instructional Technology Coach
[name of district] Schools
Doctoral Candidate, Instructional Systems Technology
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Demographic Information

* 1. Which HSE elementary building(s) did your K-2 child/children attend during the 2016-17 school year? (select all that apply)

- [ ] Brooks School Elementary
- [ ] Cumberland Road Elementary
- [ ] Durbin Elementary
- [ ] Fall Creek Elementary
- [ ] Fishers Elementary
- [ ] Geist Elementary
- [ ] Harrison Parkway Elementary
- [ ] Hoosier Road Elementary
- [ ] Lantern Road Elementary
- [ ] New Britton Elementary
- [ ] Sand Creek Elementary
- [ ] Thorpe Creek Elementary

PART II: HOME EXPERIENCES

* 2. In which grade(s) did you have a child/children enrolled during the 2016-17 school year? (check all that apply)

- [ ] Kindergarten
- [ ] First Grade
- [ ] Second Grade

* 3. Did you rent an iPad from HSE Schools for any portion of the 2016-17 school year?

- ◯ Yes
- ◯ No

4. Did you opt for your K-2 child to bring home his/her iPad for any portion of the school year?

- ◯ Yes
- ◯ No

5. Did you change your decision about bringing the iPad home daily at any time during the year for your K-2 student?

- ◯ Yes – We chose for the iPad to come home, then decided for it to remain at school.
- ◯ Yes – We chose for the iPad to remain at school, then decided for it to come home.
- ◯ No – Our K-2 child's iPad stayed at school on a daily basis for the entire year.
- ◯ No – Our K-2 child brought the iPad home on a daily basis for the entire year.

6. (Grades K-2 only) If yes, describe briefly why your decision changed.

7. We want to understand how the iPad has been used **by your child at home** this year. Please select the option for each statement that most closely reflects the experiences that your child had **at home** with the iPad during the 2016-17 school year.

My child used the iPad at home to…

	Yes	No	I don't know
Build academic skills (ex: practice math facts, spelling words, etc.)	◯	◯	◯
Communicate with his/her teacher and/or classmates (ex: email, messaging, Seesaw, etc.)	◯	◯	◯
Communicate with extended family and/or friends in other places (ex: Skype, Facetime, photo sharing, etc.)	◯	◯	◯
Create or design things based on personal interest –not school assigned (ex: take pictures, drawing, multimedia production, 3D modeling, etc.)	◯	◯	◯
Create or design things for school projects (ex: take pictures, drawing, multimedia production, 3D modeling, etc.)	◯	◯	◯

Research to learn about topics of personal interest	◯	◯	◯
Play educational games (ex: Minecraft, CodeSpark, etc.).	◯	◯	◯
Play entertainment games (ex: Candy Crush, Super Mario, etc.)	◯	◯	◯
Watch video primarily for entertainment	◯	◯	◯
Watch video in order to learn new information or a new skill	◯	◯	◯

8. Did you and your child use the iPad **together** at home this year?

- ◯ Often
- ◯ Sometimes
- ◯ Not at all

9. If 'often' or 'sometimes', what types of activities did you do **together** using the iPad?

10. Do you have any positive observations from your child's home use of the iPad this year?

11. Do you have any concerns regarding your child's home use of the iPad this year?

12. If you have additional comments regarding your child's home use of the iPad, please add them here.

PART III – SCHOOL EXPERIENCES

13. Do you have any positive observations from your child's classroom use of the iPad this year?

14. Do you have any concerns regarding your child's classroom use of the iPad this year?

PART IV – SUPPORT

15. Overall, how would you rate your satisfaction with the K-2 iPad initiative this year?

- ◯ Very Satisfied
- ◯ Satisfied
- ◯ Neither Satisfied or Dissatisfied
- ◯ Dissatisfied
- ◯ Very Dissatisfied

16. Please describe your reason for this rating.

17. How can HSE Schools better support you as a parent in regard to the iPad initiative?

18. Do you have any additional comments regarding the use of iPads as digital learning tools in HSE K-2 classrooms.

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Library Media Specialist ***2006 - 201***
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